

SD Times

SOFTWARE DEVELOPMENT

The Industry Newspaper for Software Development Managers

DECEMBER 15, 2000

ISSUE NO. 020

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MICROSOFT, IBM GET BEHIND BLUETOOTH SPECIFICATION

By words or deeds, vendor support
propels short-range wireless protocol

BY EDWARD J. CORREIA

It's hard to compete with a de facto standard. And Bluetooth is about as de facto as they come.

IBM Corp. last month began licensing BlueDrakar, its Linux-based software for mobile devices, marking the company's first foray into Bluetooth middleware for Linux. BlueDrakar has been available on IBM's alphaWorks developer portal since July as free trialware, and according to the company, a large number of downloads has prompted it to begin offering it for sale.

Mahmoud Naghshineh, who leads IBM Research's Blue-

Drakar development team, said the release is a first step toward extending the Internet to personal area networks and mobile devices. "We would like to foster application development and research targeted at wireless Internet services," he said. IBM plans to seek certification from the Bluetooth special interest group (SIG) for its middleware implementation, the company said.

While Microsoft has been vocal about its embrace of the personal area networking technology, the company has been slow to incorporate the Blue-

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Sun Brews Up Common Flavor Of XML for Java

Through JCP, releases prototype of
APIs for parsing, messaging, binding

BY DAVID RUBINSTEIN

Both technologies are platform-independent. Both owe their success to the Internet. Both are sometimes claimed to be vendor-neutral, although this is really only half true. It was only a matter of time before the relationship between Java and XML was made more formal—in this case, through a set of three new Java APIs for processing XML documents.

The three APIs, which simplify the tasks of parsing, messaging and binding XML from within Java applications, should improve B-to-B functionality within the Java platform, said Will Iverson, Sun Microsystems Inc.'s XML product manager for the Java 2 platform. "The goal is

increasing the scope of the Java platform with native XML support," Iverson said. "The advantage [to Java developers] is having some standardization." The purpose of the APIs, he explained, is to provide developers with a common "flavor" of XML for use within Java applications, to ensure greater interoperability, portability and scalability.

This month, Sun is releasing the third of these three new APIs as an early-access

prototype. This API, Java API for XML Binding (JAXB), is a newly released reference implementation developed from work done at Sun under the name Project Adelard. JAXB takes a Document Type Definition and runs it through a

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THREE APIs

JAXP Provides standard way to integrate XML-compliant parsers with a Java application.

JAXM Provides early model of a messaging system for use in B-to-B systems.

JAXB Provides binding tool to generate Java objects from XML documents.

New Tools From XML DevCon 2000

BY ALAN ZEICHICK

SAN JOSE, CALIF. — It seems that there are more XML conferences by the day, and that half of them are the regional XML DevCon events jointly produced by conference company Camelot Communications Inc. and Sys-Con Publications Inc., publisher of XML Journal. The most recent XML DevCon, held Nov. 12 to Nov. 15 in San Jose, drew over 2,250 attendees, according to Camelot CEO Terry deGuili.

Several of the exhibitors timed new product announcements and beta releases for the show, or at least had their XML-related news hit during the event.

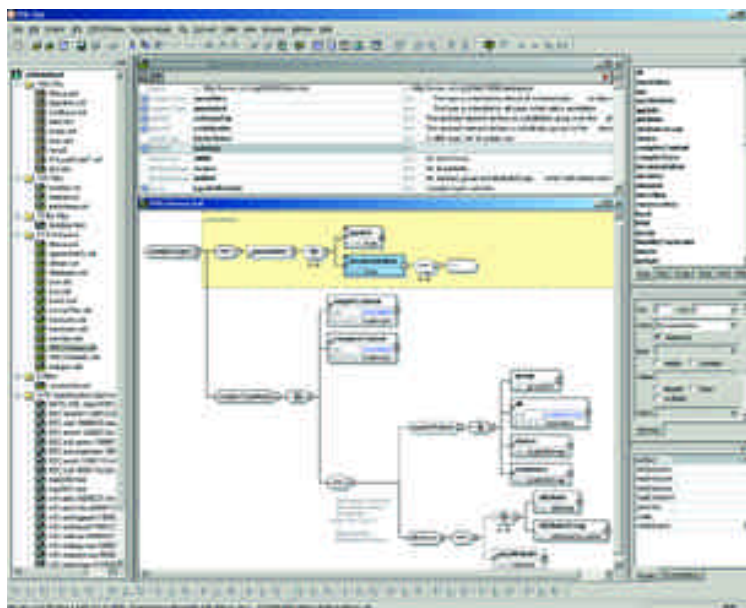
Although it wasn't exhibiting, the World Wide Web Consortium issued the Document Object Model (DOM) Level 2 as an official W3C Recommendation (www.w3.org/TR/DOM-Level-2-Core) during the show. Like the original

DOM, Level 2 is a cross-platform API set for manipulating XML documents and data. DOM Level 2 builds on the previous Level 1 specification by supporting the XML Namespace spec, and has APIs for Cascading Style Sheets and

event processing. DOM Level 2 also allows for plug-in extensions that can customize tags independent of language and platform, according to the W3C. The W3C also advanced the MathML 2.0 application specification to candidate stage.

A new directory-service development kit is here from **Radiant Logic Inc.** (www.radiantlogic.com), which used XML DevCon as the platform for releasing its RadiantOne Pilot product suite. The company describes RadiantOne Pilot as a "directory project accelerator," essentially a starter kit to help development teams prototype and test identity-oriented directory or metadirectory projects. The suite includes a 10-user licensed version of the company's RadiantOne Virtual Directory Server, plus several design tools: Schema Manager, DirectoryView Designer and RadiantOne SmartBrowser.

► continued on page 37



With version 3.5, XML Spy now has a graphical schema designer and editor.

DEVELOPER IQ TEST NO. 3

DEVELOPER NO. 1

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DEVELOPER NO. 2



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'Multiple Worlds' Becomes Virtually Server-Centric

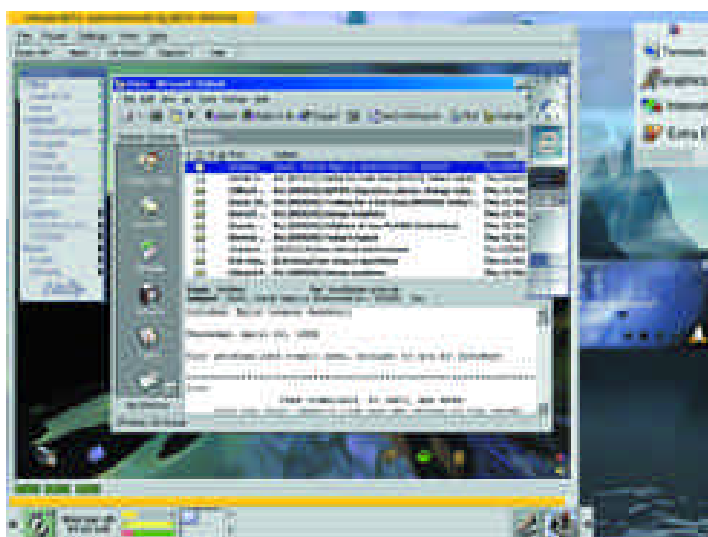
VMware helps developers control memory and CPU management for separate environments

BY DOUGLAS FINLAY

VMware Inc., whose VM Workstation lets developers run Linux on Windows desktops or Windows on Linux desktops, has rolled out a server version of its software, Multiple Worlds.

With \$20 million in investment backing from both Dell Computer Corp. and Veritas Software Corp., VMware's (www.vmware.com) Multiple Worlds comprises two server products, the GSX Server and the ESX Server, that expand on its VMware WorkStation by optimizing memory management and CPU functions to let both enterprises and service providers consolidate multiple departmental servers onto a single hardware platform.

Explaining the initial success of the virtualization technology in its VMware WorkStation desktop machine, which has gained 500,000 users since its introduction to the market 1½ years ago, Reza Malekzadeh, VMware's director of marketing, said that "working initially on features and functions for scalable servers, we applied the virtual technology to the desktop market instead because it



VMware runs Outlook 98 as a Windows 98 guest on a Red Hat Linux host.

was easier and faster to get it to market than through the server market." He added it could be tested and proven more cheaply on the desktop as well. He said the technology could now be rolled out to the server market to address such server issues as security and reliability.

Malekzadeh describes its virtualization technology as a thin layer of software between the hardware and operating system and the application that requires Intel chip technology to work

effectively. "Instead of running a one-to-one mapping between the hardware and OS and the application, we insert a thin layer of software and can have a variety of OSes running on the same hardware." But, he said, only those operating systems that run on the Intel platform could run in Multiple Worlds. "Solaris running on Intel could, but MacOS couldn't."

Because Multiple Worlds enables developers, QA personnel and testers to control system

resources such as memory management and CPU management for each instantiation of the operating system, "if one application or OS crashes, it won't affect the other programs or OSes running on the hardware," he said, effectively creating a more reliable and stable environment. He also maintained that Multiple Worlds is encapsulated or self-contained, meaning it could be replicated—or copied—to other hardware machines without the need to reinstall and configure for that particular type of hardware.

Malekzadeh said the layer of virtual software between the hardware and operating system and the application disassociates the software from the hardware cycle, so that the virtual layer utilizes its own reliable device drivers to override any new ones that may be included on Intel-based machines that could crash the system.

Targeted for the larger business, the GSX Server is designed to alleviate hardware bottlenecks within server rooms by consolidating all operating-system services running on those machines onto a small number

of servers. "Instead of a room full of incompatible machines, each running one environment or service only, Multiple Worlds brings a harmony to the room by greatly reducing the number of machines in it," he said.

VMware's ESX Server is targeted at service providers also looking to control costs while offering new products to customers. Malekzadeh said service providers could now consolidate their servers by hosting multiple customers from one server. He said because Multiple Worlds enabled personnel to manage and control resources, providers could now offer innovative services such as charging customers for direct CPU usage or specific amounts of RAM, rather than for network usage.

He also said it could greatly alleviate provisioning, which generally requires the addition of a new server and hardware, the installation of new software and testing before burning new software onto a CD.

Available immediately, cost for the GSX Server is \$2,500 per machine that runs the server. Cost for the ESX Server is contingent upon usage per month. ■

CA BREAKS THE RULES FOR BUSINESS

BY DAVID RUBINSTEIN

Rules are meant to be broken...out of programs and into the hands of businessmen.

That's the philosophy behind Computer Associates International Inc.'s new release of Aion 9.0, a rules automation engine designed to help companies adapt quickly to changing business requirements and capitalize on opportunities within their market.

"The challenge has been that rules have been in the domain of developers," said Carl Hartman, vice president of e-business management at CA (www.cai.com). "Rules were hard-coded into programs, which leads to inflexibility. We believe the business users should control their own rules and systems. To keep up with today's changing market demands and business models, pulling components from applications and putting them into the hands of business users is the only way to enable that."

According to Jim Sinur, an

analyst at research firm Gartner Group Inc., a movement is afoot toward dynamic process management environments, where business processes are user definable and flexible. Companies are trying to create "a killer workflow" that's adaptable through the use of easy-to-change rules, he said. "The business process management spectrum includes standard transactioning at one end and knowledge management at the other end. Square in the middle is a production workflow capability."

A critical component of Aion is a powerful inference engine that, in tandem with CA's Neugents ii predictive intelligence tool, can be called upon to hone the business rules based on data flow and evolving relationships. "Aion is a great solution to automating known business problems that are complex," said Ron Cass, senior vice president of research and development of Aion and predict outcomes

that you then can either avoid or take advantage of by tailoring the rules."

Aion 9.0 is the first release of the product since CA acquired it when it bought Platinum Technology International Inc. in March 1999, in what was then

the largest transaction in the history of the software industry.

The new version is integrated with CA's Jasmine ii object-oriented database, allowing development tools written in C++, HTMP, Java, Visual Basic and XML to take advantage of Aion's functionality. Aion also is integrated with IBM's MQSeries, easing its use

throughout multiple application environments. Cass said Aion offers CORBA and COM support and will have COM+ support in the future. Applications can be deployed to AIX, HP-UX, OS/390, Solaris and Windows 9x/2000. Aion 9.0 is priced at \$15,000 for its developer component and \$37,500 for its server runtime component. ■

JCP Elects Two Panels To Guide Java Platform

With no cries for and against hand recounts, no hanging chads and nary a lawsuit, the new executive committee members for the Java Community Process took office on Dec. 12. This was the first election under the JCP 2.0 guidelines.

The JCP executive committees are charged with guiding the development of the Java platform by voting on proposed changes to the specification. Served by two committees—one for the Standard and Enterprise Editions, and the other for Micro Edition—each committee has 16 seats: Ten are filled by nomination

and ratification, five are filled by open voting, and the final seat is permanently reserved for the Sun Microsystems Inc. representative.

Eighty-four members of the JCP—32 percent of eligible voters—participated in the balloting, which took place in October and November. Elected members serve a three-year term in a staggered fashion, so that five seats on each committee come up for ratification or election each year.

The members on the executive committee for the Standard and Enterprise Editions are Andersen Consulting, Apa-

che, Apple, BEA, Borland, Caldera, Cisco, Compaq, Fujitsu, Hewlett-Packard, IBM, Iona, Oracle, WebGain and State University of New York at Oswego computer professor Doug Lea. Novell, which served on the committee last year, is the only company that did not return to the board from last year's appointment.

The Micro Edition executive committee is composed of representatives from BEA, Cisco, Ericsson, IBM, Insignia, Matsushita, Motorola, Nokia, Palm, Philips, RIM, Siemens, Sony, Wind River and Zucotto Wireless. ■



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New XML Authentication Spec Heads for Approval

Meanwhile, ViaXML pushes data to mobile devices and ships with several frameworks

BY DOUGLAS FINLAY

In the future, authorization and authentication of one's identity by computer could be placed in a cookie written in XML to be viewed before privileged information from an application, or a product from a vendor, is released.

This is the scenario being considered by the AuthXML Working Group as it finishes work on a new XML specification for securing and authenticating identities over the Web. The plan is to pass the specification over to either the W3C or the Organization for Advancement of Structured Information Standards (OASIS) this month.

The new AuthXML secure authentication specification was developed by Securant Technologies Inc. (www.securant.com) after customers complained they had no clearance to access Web information from their proprietary systems, said Eric Olden, Securant's chief technology officer and creator of the AuthXML specification. "If a user signed into a VPN [virtual private network] and then went to the Web, there was no clear way to pass that session

from the VPN to the Web."

Building small proprietary adaptors wasn't the answer to enabling clearance and access from one system to another, Olden said. So the AuthXML Working Group—which comprises 30 companies, including Citrix Systems Inc., IBM Corp., Oracle Corp., SilverStream Software Inc. and WebMethods Inc. as well as Web security companies Keyware Technologies NV, Secure Computing Corp. and Verisign Inc.—began work on the specification to answer four primary needs.

Olden said the specification had to be interoperable between dissimilar systems, provide sign-on between systems and the Web, enable multiple tiers to talk with one another, and pass business transaction data across several Web applications. "We had to write a secure authentication specification that would enable Web applications on one server to talk and pass information to Web applications on another server, regardless of the browser being used, and it all had to be in sync," he continued.

He said one way to pass secure information for authentication of a person across many applications is to place the authentication in a browser cookie. The simple XML document using HTTP headers would contain the name of the person, the company from which he or she came, the person's title and the authorization certificate.

The AuthXML document specification could help developers resolve redundant sign-ons when building applications, eliminate multiple IDs and passwords across multiple systems, avoid redundant profile creation and deliver multiple services from a single location, Olden said.

PASSING XML TO MOBILE DEVICES

In a separate development, Odyssey Software Inc. (www.odysseysoftware.com) has introduced its new ViaXML open standard mechanism for mobile devices that enables developers to write and send applications to Pocket PCs and other devices running Windows CE and Windows 9x/2000.

Dave Vanable, Odyssey's vice

president of sales and marketing, said that while mobile devices traditionally initiate requests to the server and the server responds, with ViaXML the server could now reach to the mobile device to push data to it or pull data from it. "It can also push action such as notification," he said. "Pop a window or pop a message, for example."

Vanable said ViaXML is based on the XML-RPC standard. "We've simply implemented an existing standard, taken it and made it useful," he said.

A number of frameworks will ship with ViaXML to enable rapid implementation of additional application functionality. They include Distribution FX, mobile software services for remote software distribution; Manage X, mobile services for remote administration and device management of mobile devices; and Directory FX, mobile services for discovery and identification of available online users.

Licensing cost is \$495 per device, available immediately. A Palm OS version will be available in early 2001, said Vanable. ■



This simple document could authenticate a user in a cookie.

COOL:Gen Comes Web-Enabled

CA updates development environment with Java proxies

BY DOUGLAS FINLAY

Computer Associates International Inc. has revved its COOL:Gen development environment with enhancements for usability and component-based development.

Version 6.0 links to the Jasmine ii object database and provides proxies to enable information from disparate systems to be tied together and presented in a Web format.

"COOL:Gen 6.0 features Web-enabled capabilities for companies that have built large-scale applications over the past few years and are turning to the Web to present their mainframe and mixed-environment information while still keeping their high-volume, high-scalability applications intact," said Amy Plenger, director of marketing for COOL products at CA (www.cai.com).

For building e-business appli-

cations, a connector to COBOL systems was added for utilizing business applications running in that environment, she said, as well as C, COM and Java proxies to enable its Jasmine ii database to interface with applications written in several different formats. Data from these varied systems can then be combined to create new applications. She added that new Web front-end and Java applications could be built, such as Java Server Pages that could be written in different languages.

Another new feature of 6.0 is its ability to communicate asynchronously. Wasim Ahmad, vice president of application development solutions, said the asynchronous feature would provide alternative processing behavior by enabling an application to continue running even as a message is sent and processed. A second new communication fea-

ture is the MVS TCP/IP Direct Connect. Ahmad explained that developers running MVS applications in IBM mainframe environments had begun moving from SNA communications to the TCP/IP protocol. "COOL:Gen had run over SNA, but can now run over the TCP/IP

protocol as well," he said.

Version 6.0 now offers added color to action diagrams that highlight syntax as business logic is written, pointing out instances where scripting errors could occur, for example. Plenger said still another new usability feature permits third-party developers to write scripts in other scripting languages and add them to COOL:Gen, rather than having to write the additions in COOL:Gen itself.

Because COOL:Gen is a component-based development environment, a new Type Map Generator has been added that maps specifications to implementations on the component architectural diagram.

COOL:Gen 6.0 is free to current users of previous COOL:Gen versions, though TCP/IP Direct Connect and Web-enablement are extra. COOL:Gen 6.0 starts at \$15,000 per developer seat for first-time users. ■

SCANSOFT INTEGRATES FORMS INTO THE WEB

ScanSoft Inc.'s new OmniForm Developers Edition 4.05 enables developers to create electronic forms and integrate them into applications and Web sites. In addition, the software permits developers to add digital signature fields to their forms for dissemination to their customers.

"ScanSoft is moving from a stand-alone OmniForm product for creating forms to offering developers a way to integrate information in electronic form

into applications by using the ActiveX control," said ScanSoft spokesman Thomas Francoeur.

He said digital signature software is also offered in 4.05, enabling developers to create digital signature fields, which users sign using the ActiveX control and the software.

By using ActiveX controls to integrate forms and create digital signatures, OmniForm 4.05 benefits developers because there is no form coding

required, they can build a form from the ground up or convert existing paper forms to electronic forms, and they can save their forms information in a variety of formats, including .XMF, the XML file type used in conjunction with the ActiveX control.

Available immediately, OmniForm Developers Edition 4.05 costs \$1,495, and can be obtained on CD or downloaded from www.scansoft.com. ■



The XML Platform for Electronic Business

The Tamino XML Platform is a comprehensive set of products for building enterprise-scale XML-based applications. It consists of storage, development and integration components for XML data and applications. The engine of the platform is Tamino XML Database, the only native XML database management system available on the market today. The platform's flexible framework enables rapid implementation of robust, high-performance mission-critical electronic business applications based on XML standards. It is designed specifically for building applications where reliable and fast storage and exchange of XML documents are absolutely essential, for example in supply chain management, document management, electronic publishing, electronic sales systems and many other B2B applications.

PLATFORM PRODUCT OVERVIEW

The Tamino XML Platform consists of three product groups for:

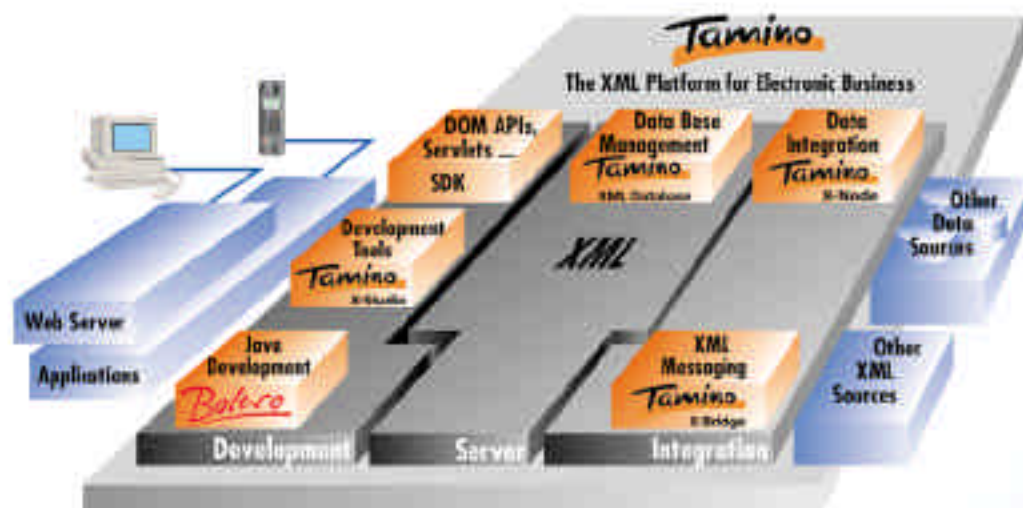
- database management;
- application and data integration;
- application development.

The database management component is Tamino XML Database, dedicated to storing, publishing and exchanging any kind of structured or unstructured data.

For integration, the platform employs Tamino X-Bridge, for the transformation and routing of XML documents between applications, and Tamino X-Node for the integration of traditional data sources (e.g. SQL databases) into the XML World. As one of the platform's development components, Tamino X-Studio provides a complete tool-set for conveniently creating and managing XML documents and Java-based electronic business applications.

STORING NATIVE XML

The centerpiece of the platform is Software AG's Tamino XML Database, which was designed specifically to store structured information in native XML format.



Storing XML documents in their original structure in Tamino XML Database results in faster response times. This represents a decisive difference with respect to traditional databases, which are retrofitted with proprietary conversion layers to enable XML document storage. It is not surprising then that this patchwork solution does not scale well, particularly with increasing transaction rates and document complexity. Users pay the ultimate price in speed and reliability. With Tamino XML Database, XPath-based queries can simply be applied as part of a URL, resulting in rapid

and reliable search and retrieval. The ability to cope with high access loads in mission-critical applications and to deliver information in any target format for any output device are also features that set Tamino XML Database apart. In addition, Tamino provides server extensions for accessing remote applications or programming custom server-side functionality such as event-triggered data processing or predefined complex queries in Java or C++. Tamino XML Database scales from Windows NT / Windows 2000 platforms through Unix and soon to Mainframe-based operation.

INTEGRATING DATA

Enterprises extending their business to the Internet typically must integrate existing back-end data stored in hierarchical, relational and object databases. The Platform's X-Node component provides users with a single server view of business data residing in both the XML Database and the above-mentioned external data containers. Reading (or writing) data through Tamino X-Node includes real-time conversion of externally stored data into (or from) XML data streams.

INTEGRATING APPLICATIONS

Exchanging XML documents with customers, suppliers and business partners over the Internet is key in the networked economy. Tamino X-Bridge provides a central communication hub for enterprise-level XML-based B2B information exchange. According to user-defined rules, the content and structure of XML documents are analyzed and routed to the appropriate receiver at low cost and without human intervention. Content-based routing rules use the values of specific XML elements and attributes, whereas source-based routing uses either the sender's TCP/IP network address or digital certificate information. Transformation of the original XML message is sometimes necessary to ensure that the data is delivered in a format that the receiving application understands. Tamino X-Bridge uses standard XML document transformation based on the XSLT standard.

DEVELOPING XML APPLICATIONS

The Tamino XML Platform is supported by a number of application development tools that are specifically geared to the requirements of

programmers creating XML-centered applications. The tools, some provided by Software AG and some by partners, are tailored to the different roles and skills of electronic business application developers. The Software Developer's Kit (SDK) provides all necessary functions to develop application-specific interfaces for access to Tamino in C, C++ or Java (e.g. basic SAX and DOM APIs in Java, JScript, Perl or ActiveX).

Tamino X-Studio is available for Windows NT and Windows 2000 Professional and allows for rapid development of scalable XML-based applications and for building XML-related documents or XSL style-sheets (e.g. for X-Bridge transformations). It includes an easy-to-use application-generation wizard as well as an integrated set of complementary standard XML tools from technology partners. These are XML editors and schema editors (XMetaL, XML Authority, XML Instance, XML Console), a stylesheet editor (Stylus), and an XML-to-language data-binding tool (Breeze XML Studio). The latter allows object-oriented programmers to access XML data stored in the XML database without knowledge of XML structures or rules.

Bolero is a Java-based development environment for building professional, mission-critical J2EE-conformant applications. Bolero gives applications direct access to heterogeneous IT systems, such as relational databases, ERP systems and diverse component models. It perfectly integrates with Tamino XML Database and supports entire development teams that need to access a common database (team repository) holding all available Bolero objects.

STANDARDS-CONFORMANT

Communication to/from Tamino XML Database or Tamino X-Bridge is based on Internet standards such as HTTP and TCP/IP. Administration or user access to the XML database is possible using standard Java-enabled Web browsers.

While Tamino products for various development or integration purposes follow their respective standard recommendations, such as XSLT, XPath or DOM (level 1), ODBC, JDBC or DCOM, all Tamino XML Platform products are compatible with the W3C recommendation, XML 1.0 and conform to the Unicode standard for internationalization. Furthermore, Bolero is J2EE-conformant, supports the Java servlet standard and multiple component models such as EJB, CORBA and DCOM. As standard recommendations change or new ones become available, Tamino XML Platform products will be adapted accordingly.

FREE STARTER KIT

The XML Starter Kit is free of charge and integrates all products necessary to start implementing XML solutions quickly. All components described above (and more) are available as time-limited evaluation versions. Just register at the Software AG corporate website for your personal copy.

<http://www.softwareag.com/xml-starterkit>

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ARTISAN ADDS PACKAGE SUPPORT TO MODELING SUITE

Artisan Software Tools Inc. has updated its flagship UML modeling suite to add package support to its repository. The new Real-time Studio 4.0, planned to ship by the end of this month, is targeted toward technical and embedded developers who have to design around specific performance constraints, and uses the company's proprietary real-time extensions to UML.

Real-time Studio has always been based on a shared repository for UML objects, project data and source code, said Alan Moore, chief methodologist and vice president of product strategy at Artisan (www.artisansw.com). This solves a problem, he said, with large teams' using standard configuration-management software to work with UML models, or even with other UML modeling tools that aren't based on repositories.

Using those tools, developers can experience delays or conflicts when they try to "check in" parts of their project and the CM or UML tool tries to merge or propagate changes made to the checked-in code throughout the rest of the project. In

many cases, he said, those conflicts have to be resolved manually. By using an active repository approach, all changes are made instantly, because there's only one instance of a piece of data; code is never checked out

onto personal development workstations.

The new addition to Real-time Studio 4.0, the package-based object repository, allows development teams to manage a group of modeling compo-

nents, either inside the repository or externally in a file-based CM tool, said Moore.

The suite comprises two separate applications: Real-time Modeler, priced at \$2,495 per seat, lets development teams

quickly define, design and document real-time systems using UML. The \$4,999 Real-time Studio Professional adds the ability to animate and simulate sequence diagrams, state models and other parts of the UML model, and can also automatically generate C, C++ and Java code from the UML model. ■

UDDI Spec Up And Running

The multivendor Universal Description, Discovery and Integration (UDDI) version 1.0 specification is now up and running—in beta.

After working to solve the server API roadblocks to make certain all information was in synchronization on a daily basis, UDDI 1.0 was released late last month at www.uddi.org/register.html for initial public beta testing.

The Web site will enable businesses to register themselves to be discovered by other companies that may need their products or services, or to discover other companies that can help them with their business, primarily with products or services.

The UDDI specification calls for the use of the Simple Object Access Protocol (SOAP) as the means of establishing contact between companies and data.

The UDDI Project has also added 94 new company members, bringing the total number of companies now in support of the UDDI Project to 130. ■

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Web Developer Salaries Jump

BY ALAN ZEICHICK

Nearly 90 percent of Web developers in the U.S. reported that their compensation rose over the past year, and 30 percent of developers received a 20 percent or higher raise. That's one of the conclusions from DevX's annual Web developer salary survey, released last month. DevX is a software development portal recently spun off from Fawcette Technical Publications Inc.

The comprehensive survey, at <http://careerlink.devx.com/articles/ss1100/ss1100-1.asp>, also showed that mean salaries varied in different parts of the U.S., with Web developers in the Northern California region topping the charts at \$74,999, and developers in the Central/Mountain region trailing at \$58,528 annually. Non-U.S. developers showed even lower salaries, averaging \$38,868.

As with most professions, there's a gender gap. In the U.S., male developers averaged \$78,357, with women at \$56,558, roughly 25 percent lower. Of the top Web developers who earn six-figure salaries, 94 percent were men.

There's good news and bad news on the employee-retention front. In the U.S., 63 percent of Web developers said that their jobs were either good or excellent. But if they become unhappy, there are plenty of other jobs waiting for them—68 percent reported being actively recruited during the past year.

On the technology front, more than half of respondents said that they used HTML (78

percent), JavaScript (69 percent), Visual Basic or VBScript (69 percent), or SQL (51 percent) in their work. Other languages fared less well, such as Delphi (1 percent), Cold Fusion (9 percent) and Java Server Pages (12 percent).

NEW ACRONYM FOR DEVX

DevX.com Inc., a privately held company owned by Fawcette and venture firm Hummer Winblad Venture Partners, also unveiled a new site design as it repositions itself as a KSP, or Knowledge Service Provider. According to a statement from



CEO Peter Horan, DevX will be launching an online, radio and trade-publication advertising barrage in the first quarter of 2001.

New services planned by DevX include a hosted paid service called "bug tracker," a collaboration site for quality assurance; a dedicated content area for wireless developers; and tools for database project staff. ■

Payment Processing Via ODBC

First, there was ODBC, a set of drivers for offering open connectivity to databases. Then there was JDBC, the Java Database Connectivity driver. And now there's oPAYc, a proprietary interface designed in the spirit of ODBC/JDBC, but which offers connectivity between applications and credit-card payment processing services.

Offered by Inline Internet Systems Inc., oPAYc (Open Payment Connectivity) consists of an ODBC-compatible driver that looks, to applications, like a database or any other ODBC-compliant data source. However, the oPAYc driver actually initiates an IP-based connection over the Internet with a payment processor and transmits the transaction.

According to the company (www.opayc.com), data is communicated between the drivers using standard SQL syntax. The oPAYc is configured to work with any of several dozen payment processors using a config.ini file; by changing the file, the oPAYc driver and payment processor connection can be altered dynamically without affecting the underlying application.

The driver runs on BSDi, FreeBSD, Linux, SCO, Solaris and Windows, and is said to be compatible with applications written in Active Server Pages, C, Cold Fusion, iHTML, Perl, PHP and Visual Basic.

oPAYc is available now, with pricing starting at \$150 per driver per server, with a \$50 per-driver annual subscription fee. ■

WIBU-LITE: DONGLES FOR LESS

Development teams looking to include hardware-based copy protection now have a lower-cost option from Griffin Technologies LLC. The company's new WIBU-Lite is a scaled-down version of the WIBU-Key hardware-key system, using a hardware key designed to authenticate users of a single application.

The new WIBU-Lite key, which comes in both USB and parallel-port versions, contains a small ASIC that can be programmed with a single encryption key. This key can be accessed from Windows-based PCs via a DLL, or from other operating systems and hard-

ware platforms via APIs, according to the company (www.griftech.com).

WIBU-Lite keys cost from \$25 down to \$15 in volume, said company spokesperson Roni Bregman, and are designed for companies that sell many single-user copies of their software and are not concerned with network licensing. The keys could also be used by enterprise developers to secure access to internal applications.

By comparison, she said, the WIBU-Key product, priced at between \$64 and \$37, can protect multiple applications from a single hardware key and can also communicate with Griffin's



The WIBU-Lite key comes in two varieties: one for Universal Serial Bus, the other for parallel ports.

network-license management system. The larger WIBU-Key is also available in serial and PCMCIA-based models. ■

News Briefs

COMPANIES

Progress Software Corp. purchased the intellectual property rights of **X-Collaboration Software Corp.**, including software, collaborative services and patent applications. With the purchase, Progress will use X-Collaboration XML developers to accelerate the next generation of Progress' SonicMQ messaging middleware . . . **Broadvision Inc.** will embed **BEA Systems Inc.**'s WebLogic Server into its One-To-One Enterprise application platform. Broadvision has also expanded its alliance with **Iona Technologies Inc.** by integrating Iona's J2EE-compliant Orbix and iPortal Application Server into Broadvision's One-To-One Enterprise application platform. The alliance extension will help Broadvision customers add to their J2EE applications . . . **Software SETT Corp.** will be using **Seapine Software Inc.**'s TestTrack defect management application in-house, and will provide it to its own clients to track software defects. Seapine will provide free technical support to Software SETT customers that use TestTrack . . . **Tridium Inc.** closed on a \$20 million round of financing from **kRoad Ventures LP** and **Enron North America**. The money will be used to help Tridium continue to build on its Niagara Framework for creating applications that access, automate and control smart devices in real time over the Web. Tridium also will advance research and development for the Vykon product line, an application suite powered by Niagara designed for the building automation and energy services industries . . . **Software AG Inc.** is working to integrate its Tamino XML database with **Birdstep Technology ASA**'s database engine for handheld operating systems. The agreement permits Birdstep to optimize Software AG's native XML server, while Software AG said the deal will help them penetrate the mobile market more effectively . . . **SilverStream Software Inc.** and **Actuate Corp.** are working together to permit Actuate customers to use SilverStream's Component API architecture to connect its e-business technology with Actuate's information delivery software. Both companies will co-market the offering . . . **Droplet Inc.** has partnered with **Fort Point Partners Inc.** and **Iguana Studios Inc.** to provide Droplet's software development kit to the two companies. The SDK enables developers to provide Web inventory status of sales forces and to create banner ads that order and deliver updates.



PRODUCTS

Software AG Inc.'s **Tamino XML Starter Kit** enables developers to quickly set up an XML database and generate XML-based applications for deployment over the Web. The kit contains full versions of the Tamino XML platform, and tools and guidelines for evaluating the products . . . **SuSE Inc.**'s \$49.95 **SuSE Linux 7.0** for the Power PC processor is now available and includes not only the KDE 1.1.2 GUI, but also the beta KDE 2.0 GUI. The product supports IBM's Power3 processor as well as Motorola Prep CPUs . . . **SerpikSoft's EditPro Version 1.0** text editor for Windows provides syntax highlighting for developers writing in C/C++, CSS, HTML, Pascal, Perl and other languages. Highlighting schemes in the \$29 editor can also be created with a syntax scheme editor . . . **TimeSys Corp.** has released a customized version of its **TimeWiz** for Rational Software Corp.'s **Rose RealTime** to enable developers to guarantee response time for each time-sensitive embedded application . . . **Borland Software Corp.** released **JBuilder 4 Foundation**, a Java development environment for building Java applications that features an integrated editor, debugger, compiler, visual designers and wizards. New features include Java 2 JDK 1.3 HotSpot Client Virtual Machine; AppBrowser; CodeInsight; new source code management; an XML-based project manager; and Visual Studio and Brief editor keymaps . . . **Microsoft Corp.**'s new **DirectX 8.0** for multimedia application development offers improved graphics-authoring tool integration to simplify the development of optimal 3D characters and environments. Other enhancements include improved scalability, vertex and pixel shaders as well as improved audio functions . . . **Intel Corp.**'s **C++ Compiler for Windows version 5.0** and **FORTRAN Compiler for Windows version 5.0** use performance features available on the new Pentium 4 processor, while including a prerelease of the Itanium 64-bit processor. The compilers ► continued on page 37



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Kinecta's Content-Distribution Tool Lightens Up

Kinecta Corp. is releasing a free content-distribution tool, Syndicator Lite, which is based on the Information and Content Exchange (ICE) XML protocol, an open interoperability standard promoted by the ICE

Authoring Group. "ICE is similar to both the RosettaNet framework and the ebXML transport protocol, both of which are XML protocols created to answer needs of specific information transport problems," said

Adam Souzis, Kinecta's chief strategist and co-founder.

According to the company (www.kinecta.com), Syndicator Lite is a streamlined version of its flagship Kinecta Interact platform, which distributes informa-

tion to large-scale groups. Dave Burke, vice president of marketing, said that, unlike Interact, which offers unlimited usage, Syndicator Lite is "targeted at no more than five subscribers on a network who normally use file

transfer protocols and e-mail to send and receive content information." Syndicator Lite uses the ICE protocol to negotiate rules and delivery times for sending the content.

Using Syndicator Lite, small businesses can establish syndication business processes, such as ongoing distribution of content like financial data, CAD drawings, product catalogs or inventory data to partners or suppliers.

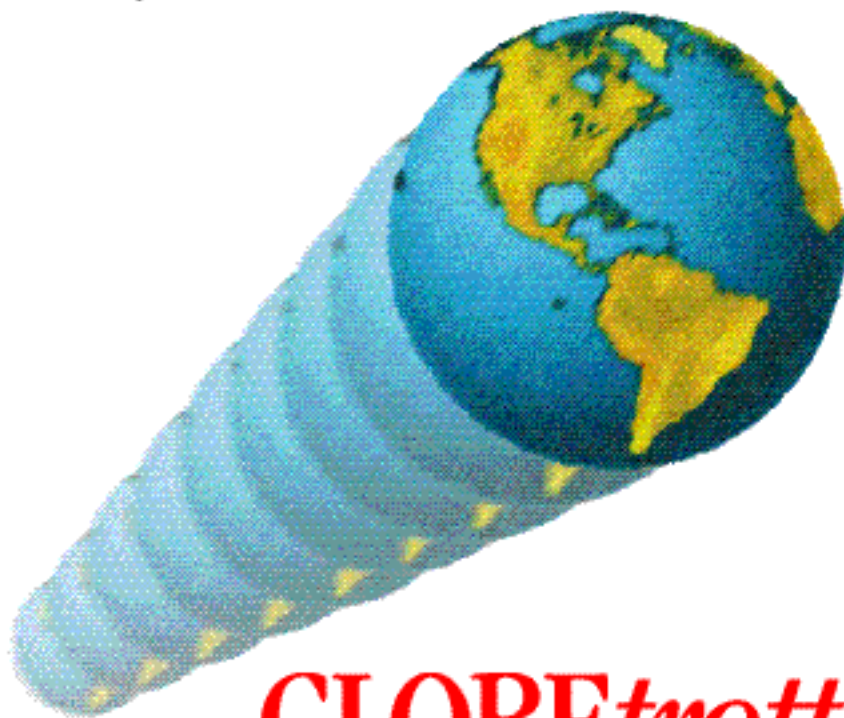
Burke said that because ICE is content agnostic, virtually any type of data file could be sent over the protocol, and could be delivered inside e-mail messages or over HTTP.

He added that because it is a content distribution product, Syndicator Lite could be used by developers to distribute software patches to their customers.

Syndicator Lite will be available beginning Jan. 15, 2001.

Meanwhile, the Interact platform was upgraded to version 3.2. It will support Sybase databases; it already supports Microsoft's Access and SQL Servers, MySQL and Oracle databases. ■

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Perforce 2000.1 Manages Content

The newest version of Perforce Software Inc.'s configuration management software, Perforce 2000.1, focuses on adding support for new integrated development environments, and also adds features designed to bring the tool into the broader world of content management.

According to company (www.perforce.com) president Chris Seiwald, "Users want to run Perforce for tasks as varied as release management, defect tracking and Web content management. Perforce 2000.1 provides support in all of those fields."

New features in Perforce 2000.1 include the ability to tag files with keywords, more options for time-stamp preservation and the ability to map file types to applications. Files can also be located in the Perforce repository based on content patterns or file location, not just on file name and description.

Perforce 2000.1 also supports Metrowerks' CodeWarrior IDE for Windows.

Available now, Perforce 2000.1 sells for \$600 per seat. ■

Sun's Forte for Java Is at Your Service

IDE changes way components interact at runtime by exposing functionality

BY DAVID RUBINSTEIN

Building applications from components is taking on a whole new meaning in Sun Microsystems Inc.'s upgraded Forte for Java integrated development environment, due to be released this week.

The modular Forte framework sees components as independent units that come together as services at runtime, as opposed to merely pieces of a larger application. "Developers won't have to hard-wire components together to build applications," according to Drew Engstrom, product line manager for Forte for Java. "It'll be the developer's job to expose the component's functionality as a service, using HTTP and XML." Forte for Java 2.0 defines components as any entity of software that is fully distributed and uses open,

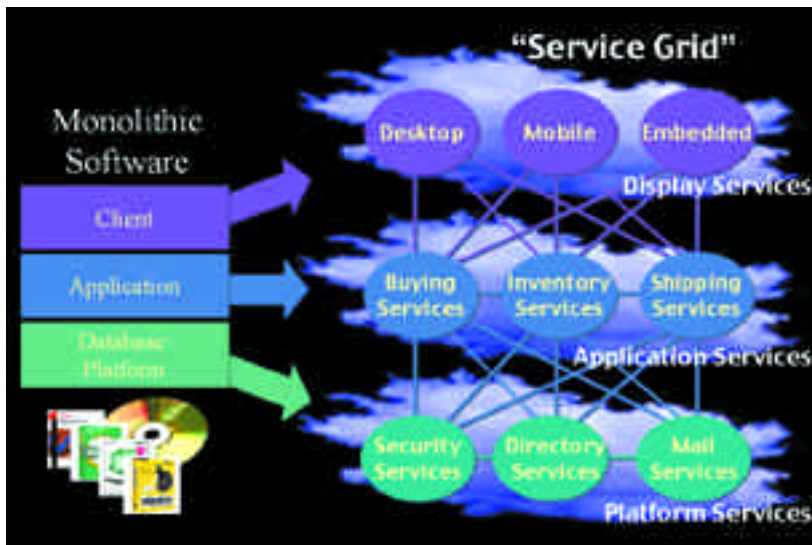
loosely coupled technologies to interact with other services at runtime. Engstrom said Forte's component paradigm is not that different from the object method, but opens it up and applies it more generically.

For instance, he said, an application builder cannot assume someone will interact with the applications via a browser. A developer can build a unit once—say, to check stock prices—and different display services will act on it. This raises functionality above language and platform parameters, Engstrom said.

"We've built the plug-in, but the Holy Grail's not there yet," Engstrom said. "But we know what it looks like and what form it needs to take."

The idea of a component's functionality existing as a service is not a notion held solely by Sun, Engstrom said, citing the messaging capability being built into Microsoft's .NET platform. "It's pretty much accepted that application development will move this way," he said.

IBM and Microsoft are working on an XML schema called Web Services Description Language (WSDL), a technology that Engstrom said is coming out of the UDDI (Universal Description, Dis-



The service grid allows for fully distributed components to interact in a more dynamic way.

covery and Integration) consortium that will allow applications to build themselves at runtime even while negotiating for services along the transaction.

Because application servers add a proprietary level to the runtime, he added, the development tool ultimately must be able to leverage extensions built into the platforms. Forte for Java is built upon the NetBeans open-source IDE framework acquired by Sun in 1999, Engstrom said, meaning that vendors can build their own component modules, or add modules available from Sun, without worrying about Sun changing the underlying platform. Forte for Java is tightly integrated with the

Sun/Netscape Alliance's iPlanet application server, he said, providing for source-level building and debugging.

New features in Forte for Java 2.0 include capabilities for JSP 1.1 Tag Library Editing and Debugging; transparent persistence, which allows developers to generate Java persistent objects from database schema and vice versa without the need to know SQL; and bundling with Forte's TeamWare source-code management tool that includes features for check-in/check-out, archive reporting and visual differencing. The new IDE release has predefined profiles for third-party source-code management systems, including ClearCase,

PVCS, SourceSafe, Starbase and VCS.

Engstrom said four editions of Forte for Java are being released as modular packages on the same framework. These are custom environments to build upon, and customers no longer are bound by the release cycle of the IDE vendor, he explained. If one part of the IDE needs to be updated, that update can be done via a plug-in.

The updated Community Edition targets small shops getting introduced to Java, and a new Internet Edition is for enterprises doing Web development with a database at the back end. An Enterprise Edition, which will be included in Forte for Java 3.0 to be released next summer, targets large shops building back-end systems with EJBs by offering container managed persistence, session beans and features for security, version control and collaborative testing. There also is a scaled-down "Telco" Edition for use by industries in that vertical market.

Sun announced last month that more than a half-million copies of Forte for Java Community Edition have been downloaded since the product became available on www.sun.com/forte in March. ■



Modular architecture provides flexibility for developers.

JAVA XML

◀ continued from page 1

binding tool to generate classes, so that when an XML document comes in, the classes give back Java objects that can be turned into beans or EJBs.

"The advantage is it's much faster," Iverson said. "You don't have to worry about the whole package coming in, and you don't have to stream back for validation." JAXB, Iverson said, allows validation of the objects to occur in memory, which he called a huge performance enhancement.

The first API to be released was the Java API for XML Parsing (JAXP), version 1.0, which debuted in February. Version 1.1, also in early access, changes the name from parsing to pro-

cessing and adds DOM Level 2 support, SAX Level 2 support and XSL support.

Iverson explained that the API gives Java developers a standard way to integrate any XML-compliant parser with a Java application. It also provides an easy option for generating, handling and reading native XML documents in a database and deploying them in Java applications.

Iverson said Sun wants the APIs released into the open-source community, adding that JAXP already is included in the Apache Web server. He said Sun is actively soliciting people to work on these open-source projects. In fact, he said, when JAXP 1.1 is added into the next roll-out of the JDK, it will mark the first time Apache code has been

written into the developer kit.

Iverson said Sun also plans to include the messaging API—JAXM, the second member of the trilogy—in a future version of the JDK. JAXM will provide Java developers with an early model of a messaging system for use in B-to-B systems, based on work being done as part of the messaging protocol ebXML initiative and the Java Community Process.

"The goal is to make XML more reliable and portable," Iverson said, "and to increase the uses of XML on the Java platform."

Iverson said he expects final versions of the APIs to be ready early next year. The prototypes can be retrieved now from <http://java.sun.com/xml/download.html>. ■

INFOTERIA PUTS JAVA INTO XML ENGINE

Look out XML, here comes Java.

Infoteria Corp. now offers a Java version of its iPEX XML processing engine. The tool was initially designed to provide XML-oriented library functions to C++ programmers, as well as a set of COM components to Windows developers. Through an API, Infoteria has made the class libraries available for Java programmers.

"More server platforms support Java," said Carl Tyler, director of product development at Infoteria (www.infoteria.com). "And a large number of customers want to support

XML. Java and XML are from the same mindset. Customers don't want to be tied down, and developers want to have choices." Tyler said the libraries can be used for development projects ranging from handheld devices to mainframes.

According to the company, the Java version of iPEX will be available by the end of the year for \$150 for a developers' version with a single client access license. The deployment license costs \$1,200 for each 10 concurrent users accessing an application incorporating the iPEX library. ■

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CodeWarrior 6 to Support Sun's MID

Version adds direct-to-device debugging, PointBase small-footprint database client

BY EDWARD J. CORREIA

With Sun's mobile information device (MID) profile barely out of the chute, Metrowerks Inc. has announced a version of CodeWarrior that supports it. Together with Sun's CLDC specification, the MID profile permits developers to build a complete runtime environment for devices such as cell phones and two-way pagers based on Java 2 Micro Edition, the company said.

CodeWarrior 6.0, scheduled for release on Nov. 30, also will feature direct-to-device debugging, which Metrowerks president and CEO David Perkins said has been a feature long lacking from the tools available to Java developers. "One of the challenges that Java developers have had in writing ap-

plications is that they want to be able to debug directly on the device," said Perkins. It is important, Perkins said, to debug directly because host simulation sometimes does not accurately reflect the circumstances of the hardware.

CodeWarrior 6.0 also will feature integrated code validation, which Perkins said will permit developers to continuously validate their code against a target Java profile, ensuring that it conforms to the specific classes supported on the device. "This can give a developer a high level of comfort that his application will run on the device in a timely manner," Perkins said.



Until now, Java developers lacked a direct-to-device debugging tool, says Metrowerks' Perkins.

Metrowerks also will bundle CodeWarrior with the PointBase database client, a small-footprint, 100% Pure Java database front end for handheld devices. The software permits developers to create client database applications that can work with a PointBase back-end server to allow clients to download information when online, manipulate the data offline and synchronize later. CodeWarrior cannot build PointBase back-end components, Perkins said.

CodeWarrior 6.0 will sell for \$399 per developer and is available at www.metrowerks.com/download. The company also

has announced that it is working on CodeWarrior 7.0, which reportedly will target devices running Palm OS, including HandSpring's Visor with support for USB debugging. The announcement was made at last month's PalmSource developers' conference in Santa Clara, Calif.

METROWERKS HITS

HIGHWAY WITH AUTO RTOS

Metrowerks is getting into the RTOS business. Last month, the company assumed responsibility for the sales, marketing and development of OSEK, an open set of specifications for the design of real-time operating systems designed for automotive control systems by parent company Motorola Inc.

According to Metrowerks' Perkins, the move is in harmo-

ny with his company's acquisition last summer of the Swiss development tools company Hiware and with its overall strategy. "For us, there's an increased focus on solutions for vertical markets. It tied in well with our acquisition of Hiware because they have done a significant portion of their business in the automotive space."

Perkins said that OSEK (Open Systems and Corresponding Interfaces for Automotive Electronics) is designed for the automotive systems controlling chassis, power train and body electronics, and will be integrated along with debuggers and simulators into the CodeWarrior development tools. The RTOS is available now for HC08, HC12, 683xx, MCore and Motorola PowerPC processors. ■

Trolltech Releases Qt/Embedded, Enables Win/Unix Ports

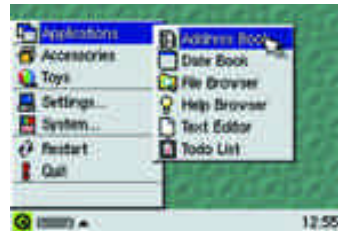
BY EDWARD J. CORREIA

Software-component maker Trolltech AS has released Qt/Embedded 2.2.2, an update to its flagship toolkit for creating graphical user interfaces for embedded applications. The toolkit is available for licensing under both commercial and GNU general public licenses.

Trolltech also has released Qt Palmtop Environment, which it says is the first personal information manager for Linux released under the Free Software Foundation's General Public License (GPL). Qt Palmtop Environment includes a windowing system, window manager, application launcher and input methods such as those for virtual keyboards, all of which work directly with the Linux framebuffer, the company said.

According to Warwick Allison, Trolltech's lead developer for Qt/Embedded, the release is significant because it permits developers currently writing to the Qt API and component libraries for Windows and Unix to easily migrate to handheld platforms. "Open-source developers can now extend beyond the traditional desktop," he said. "Programmers can now port their favorite Qt-based applications over to embedded devices."

Hogne Tjemsland, Trolltech's



QT offers free GUI tools and apps.

product manager for Qt/Embedded, said the commercial and GPL versions share an identical code base. "We believe that

open-source developers should have the same high-quality tools as are available to commercial developers," he said. Developers using the free version are required to return their developed code to the open-source community. "Furthermore, as long as the device you install this software on is only delivered with GPL software, you can also use Qt/Embedded on the device without purchasing runtime licenses."

Although developers building closed-source applications must purchase runtime licenses for Qt/Embedded, they will benefit from the company's support services, Tjemsland said.

Qt/Embedded, like its Windows and Unix counterparts, is available in professional and enterprise editions. The professional version includes a GUI toolkit, icon pixmaps and a document interface. The enterprise version adds networking, 2D

graphics capabilities, tables and an XML parser with SAX interface and DOM level 1 support.

Trolltech (www.trolltech.com) also includes a series of applications written to the Qt API, which along with the widgets, occupy less than 2.5MB of device memory, the company said. Qt/Embedded single-unit pricing is \$2,325 for the professional version and \$2,525 for the enterprise edition, per developer. ■

BE MAPS PLANS FOR INTERNET APPLIANCE MANAGEMENT

BY EDWARD J. CORREIA

Since it launched a strategy of distributing its BeOS operating system under an open-source license, Be Inc. has been relatively quiet. Now the company has announced plans to release the Be Internet Appliance Management and Administration Platform (BeIA MAP), a management framework that the company promises will make Internet appliances as reliable as a "telephone dial tone."

BeIA MAP, which is targeted mainly at ISPs, is a multipart solution that consists of device management and administration servers; a mastering station for development, testing and deployment of updates; a client application server; an import

server that provides services including site blocking, content filtering and logging; and an authentication server, which handles end-user device security.

According to the company (www.be.com), the framework also will include the Client Platform, a suite of tools and integrated software that developers can use to create customized Internet appliances that can be maintained with MAP after the device is deployed with no user intervention.

This is an important distinction, said Jean-Louis Gassée, Be's chairman and CEO, and what sets computers apart from appliances. "The remote management and administration of devices, without user involve-

ment, is a clear differentiation point between appliances and computers," he said. "Be's services let device and service providers deliver appliances that offer the seamless end-user experience of a household appliance on a device with the capabilities of an advanced computer."

Be is not the only company working on appliance management products. Java developer Espial Group Inc. markets the Device-Top and DeviceServer system to device OEMs and ISPs. "It's good to see a validation of what we've been doing for years," said Jaison Dolvane, Espial's



Our goal is to make Web appliances as reliable as a dial tone, says Be's Gassée.

president and CEO. "The marketplace is telling us that Java's open solution and broad developer community is preferred to a proprietary solution." Espial's solution is Java-based, and therefore not limited to any specific platform. Dolvane added that it seems appropriate for Be to plan such an offering, as device

management has become a required cost of entry into the Internet appliance market.

BeIA MAP is scheduled for release in early 2001, and pricing is based on volume and the number of services required, the company said. ■

CAD-UL Simulates Intel's XScale Processors

BY ALAN ZEICHICK

As a new microprocessor platform, Intel's so-called XScale processor family, due to be released in January 2001, does not have the same wealth of development tools that more established architectures have. Stepping into that void is CAD-UL AG, which has announced a simulator for the XScale processor family. Currently in beta, the XDB Simulator is expected to be commercially released in January as well.

XScale is the name Intel has chosen for the next generation of its StrongARM microprocessor architecture (<http://developer.intel.com/design/intelxscale>). The first product to be released in that family will be the Intel 80200, a 32-bit processor with speed ranging from 333MHz to 733MHz. According to Intel, this new ARM v.5TE-compliant embedded processor is expected to dissipate 1.3 watts even at the 733MHz clock speed.

The XDB Simulator is a debugger with an integrated

instruction-level simulator designed to replicate the Intel XScale 80200 processor's architecture, according to CAD-UL, including not only its hard-wired functions, but also its MMU. All instructions of the 80200 processor are supported, including the 32-bit ARM V5 instructions without floating point instructions, the 16-bit Thumb instruction set, and the ARM V5E digital signal processor extensions. Other features will include manual and automatic memory mapping and C/C++/Assembler instruction trace.

According to the company (www.cadul.com), the debugging tool not only simulates the main processor itself, but also four on-chip coprocessors that Intel will be making optionally available as part of the 80200 family: the ACC0 DSP designed for audio processing; the ACC13, which controls the bus control unit and interrupt

control; the ACC14, used for monitoring and tracing system performance; and the ACC15 system control module, used to control hardware breakpoint registers, MMU and paging.

"Engineers developing portable computing devices will be able to prototype application

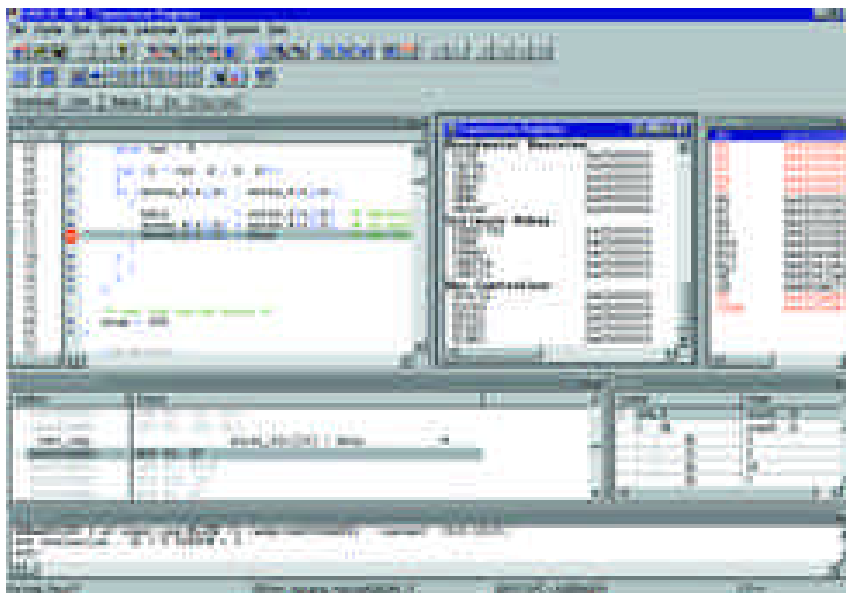
code for the Intel 80200 processor with confidence, knowing that they are using a simulator debugger that mirrors the exact architecture of the microprocessor itself," said Martin A. Hermann, CAD-UL's managing director. "By extending our development

tools to support the Intel XScale core, we will allow developers to take advantage of a low-voltage, exceptionally fast microprocessor," he added.

The XDB Simulator is endorsed by Intel Corp. "We are very pleased that CAD-UL's XDB debugger is now available for the Intel XScale microarchitecture family," said Michael Wall, director of Intel server/storage operation, in a statement. "It brings an ease of use [with] a full-featured GUI that enhances the productivity of code debuggers and testers."

CAD-UL said that it will release a C/C++ compiler for the XScale processor by early 2001. The simulator is also said to be fully compatible with the standard GNU compiler object format.

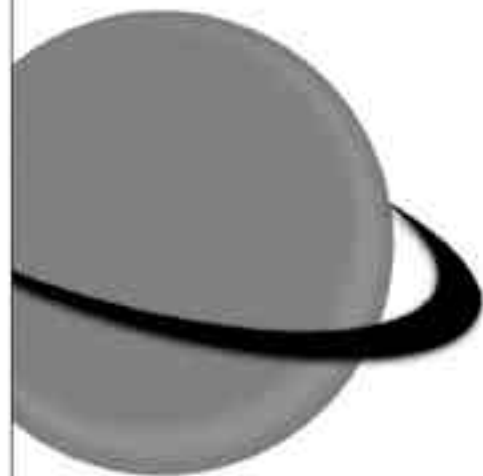
The XDB Simulator, which will run on Windows 9x/2000 workstations, will be priced at \$2,250 per seat. ■



CAD-UL's XDB Simulator and debugger for Windows hosts will replicate the Intel XScale 80200 architecture, including all hard-wired functions, coprocessors and its MMU.

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IP Gear Creates Synchronicity Among Dispersed Teams

BY EDWARD J. CORREIA

Synchronicity Inc. has announced IP Gear 1.2, an enhancement to its flagship software for managing intellectual property and the projects that design it. Among the new features will

be support for audit trails, change notification, a customizable interface and integration with the company's DesignSync to help eliminate duplication between iterations.

According to Mark Miller,

vice president of marketing and business development, geographically dispersed development teams and outsourcing have made managing intellectual property harder than ever before. "In the last couple of

years, there has been a [separation] of design teams. Now suddenly they are outsourcing everything they can," he said. Miller said that IP Gear enables the concept of a "virtual project team," which he described as "a

collection of [separated] resources that don't all live behind the same firewall," but can nevertheless work on the same project seamlessly.

"The sweet spot for Synchronicity has been large system-on-chip design projects that involve collaboration across multiple sites," Miller said. While IP Gear is targeted primarily at semiconductor manufacturers, it has a broader appeal.

Trent Poltronetti, Synchronicity's director of corporate marketing, said that the same management framework can be applied to many industries. "We manage data. We help keep track of it, move it around and help users communicate about it," he said. "That data can be chip layout data, a high-level language description of how a chip could work, or it could be pure software code and test suites. We manage all of that."

Miller said that Synchronicity (www.synchronicity.com) generally competes with home-grown solutions that are a "mish-mash of makefiles, Perl scripts and [shareware] stuff that they hack together on a project-by-project basis," adding that IP Gear does not generally compete with "pure software configuration management products" like Rational's ClearCase. "We don't go head-to-head with them or target the same customers in almost all cases," because of differences in the level of project complexity.

Hardware development differs from software development mainly in the levels of abstraction that exist between the high-level code and the final executable, Miller explained. "It's a boatload of information," Poltronetti added. "There are hundreds of files, and a couple dozen views and interface description files. A whole lot of it is physical implementation data that goes to the manufacturer fab line," which he said also can vary from one fabrication facility to another.

IP Gear is scheduled for release in early 2001 and pricing starts at \$500,000, depending on configuration and customer site requirements. The server software runs on HP-UX and Solaris; clients require only a browser. ■



IP Gear competes with home-grown solutions, says Miller.

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BLUETOOTH

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tooth specification into its operating systems.

Bluetooth (www.bluetooth.com) describes a set of open specifications for creating royalty-free, low-power, interoperable wireless devices. The effort is being led by an industry consortium consisting of more than 1,800 companies.

Since joining the Bluetooth vendor consortium's SIG more



Microsoft's Tablet PC design will run a full version of Windows.

than a year ago, Microsoft has yet to make Bluetooth capabilities native to any of its operating systems. At Comdex in Las Vegas last month, the company demonstrated a prototype of the Tablet PC, a clipboard-sized computer running Whistler, the code name for Microsoft's next release of Windows 2000.

But with the exception of wireless Ethernet (IEEE 802.11), the company was noncommittal about which wireless networking protocols it would include with the device, saying only that it would "eventually support Bluetooth or any broadly supported wireless standard." Microsoft said it expects OEMs to release versions of the Tablet PC sometime in 2002, but it has no plans to market the device itself.

Meanwhile, it was reported that Mike Foley, a wireless architect at Microsoft, stated in a panel discussion at Comdex that the company will include Bluetooth 1.1 specification support in Whistler as well as in future versions of Windows 2000 soon after the release of the updated specification, which is scheduled for December of this year or January of next year.

Microsoft in June together with Intel released its road map for native support of Bluetooth in its operating systems but was not specific as to which operating systems would include support first. But the report stated

that Intel later this year will release a suite of tools to enable wireless file transfer, synchronization and dial-up networking between Bluetooth 1.0-enabled devices. It further stated that Intel also is developing a hardware and software solution that will Bluetooth-enable mobile PCs, and that the solution would

be compatible with Windows 98/Me and Windows 2000.

According to a Microsoft spokesperson, delays in its delivery of support for Bluetooth are due largely to shortages of production-quality hardware required for testing the technology. The company said that so far, it is too early to

determine the specific features that will be included in Whistler, or whether it will initially support Bluetooth.

While progress is slow, Fran O'Sullivan, vice president of mobile computing development for IBM's Personal Systems Group, said that cooperation between companies is promis-

ing. "We believe that industry convergence is necessary to enable a unified Bluetooth end-user experience in the PC and Windows environments," she said. "IBM is working proactively with Intel and Microsoft to facilitate Bluetooth development efforts, including providing technical expertise and systems." ■

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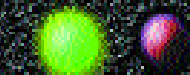
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Not an Open-and-Shut Case

Many in the RTOS industry believe that freedom from royalties is the best way to develop applications for embedded devices.

But is free software really free?

BY EDWARD J. CORREIA

ou're designing an embedded device. When summing up the software costs, it's hard to resist the lure of free components offered by the open-source community; putting zeros next to the real-time operating system (RTOS) and device drivers will surely help the bottom line of any project.

But is open-source software really free? And is it reliable? Some say that if your company decides to use software released under the Free Software Foundation's General Public License (GPL), you may be in for more than you bargained for. And maintaining your own RTOS? You may as well sign a pact with Satan.

To no surprise, Linux market leader Red Hat Inc. (www.redhat.com) espouses the pro-open-source view. Kim Knuttila, Red Hat's vice president of engineering services, argues that using open-source software for embedded development has clear advantages. "When you look at a reasonably mature open-source project, you'll be able to use work that other peo-

ple have done that you don't have to pay for," he said, adding that mature projects are easily identified because they are usually accompanied by a busy newsgroup or working group Web site. "There's an economy of scale that occurs when many people are using the same software as a component of a system."

In the other corner is Wind River Systems Inc. (www.windriver.com), the world's leading RTOS developer. According to Wind River's John Fogelin, vice president and general manager of the platforms business unit, "Open source is a fundamentally good force within the marketplace, but it's not the panacea that some would have it be." Wind River develops and markets VxWorks, a closed-source RTOS, although the company will license its source code to customers.

Fogelin said that although his company has benefited from open-source software, developing an embeddable RTOS from open source is more work than some might expect. "Once you provision yourself with all this open source, you

still are not quite where you want to be. After you get through the first step of getting it all onto your machine, you have to go through a considerable amount of work to turn that into the appropriate platform for embedded development. So what our company has been selling is time-to-market."

Another closed-source vendor agrees. "We've done a lot of investigation into real cost of ownership of royalty vs. non-royalty-based designs, and I think this is a trend that will run its course after a while," said Ken Kaplan, president and CEO of Microware Systems Corp. (www.microware.com), which develops and markets OS-9, a closed-source RTOS commonly found in Internet appliances and industrial and automotive control systems. "What really happens in an open-source project is that when getting set up with technologies like Linux, the operating system becomes the first major milestone of the project, particularly in engineering time. And that's distracting from the applica-

tions they really should be working on."

Curt Schwaderer, Microware's director of network technologies, said that to an embedded industry hungry for change, Linux is a wolf in sheep's clothing. "The proprietary way of not having access to the source code, plus having to pay a license fee and runtime royalties and a maintenance contract, seemed more expensive than it needed to be," he said. "So the whole open-source initiative, in which you could get a mountain of free source code, sift through it and gather the gems that you need, seemed at first glance to be a pretty good total-cost-of-ownership solution. You weren't paying a license or royalty, and you could get engineers from the open-source community, theoretically."

But then the wolf appeared. "What people didn't realize is that it takes quite a bit of engineering horsepower to sift through the mountain of code to extract the pieces that you need and fill in the holes to create a product. What

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BUCKING THE OPEN-SOURCE TREND

Deanne Hoppe, Microsoft Corp.

One of the most important aspects of today's open-source movement is the flexibility it offers developers to differentiate their products from the competition. But despite this trend, Microsoft Corp. continues to play its source code close to the vest.

We spoke about open source with Deanne Hoppe, lead product manager with Microsoft's Embedded Appliance Programming Group, about why the company continues to guard its Windows CE source code and how its developers can still gain an advantage.

SD Times: What is Microsoft's definition of open source?

Deanne Hoppe: As far as open, I see it not just as about source code but as a business model. It's a type of business model that allows someone to purchase or receive the code that is readable, changeable,

and be able to alter and redistribute that code. So we see it not just as access to code, but also being able to distribute the changes you've made to that code.

Does Microsoft offer the source code of its embedded operating systems?

In Windows CE, we offer some readable access to the source to enable embedded developers to bring up their device for the first time more quickly. By seeing the relevant code, they can debug the integration between the hardware and the software more easily.

Why doesn't Microsoft offer its source code, as do many of its competitors?

When you start getting into open source, where you are giving access to all of your code, you start raising hard issues for developers and for the corporation. How do you provide service and support to embedded developers with all the alterations to code out there? It

doesn't enable us to service our customers the best way.

What is Microsoft's policy on supporting previous versions of its operating systems?

We support the embedded developer in building the device. We have different programs that support all of our products so we don't abandon any customers. Once the device is purchased from an OEM, they handle the support for that device. Once that OEM has built that device and distributed it, it's their customer.

So if the ultimate burden of support falls upon the OEM, why should Microsoft care if a vendor alters the operating system?

We support the OEM and the embedded developer in getting their devices out the door. We do not support the open-source business model because it does not enable us to service at the level of building that device.

Do you feel that the source-restrictive model limits an OEM's ability to customize and therefore differentiate its Windows CE-based devices?

Absolutely not. Windows CE is a componentized and granular operating system that offers [OEMs] lots of flexibility to pick the components that they're going to need for their unique OS image they're going to build.

But every OEM picks from the same list, and none has the ability to modify those components.

Right. But we also give them the flexibility to build their own [user interface] on top of it to create differentiation. So there's a lot of flexibility. But also it allows us to guarantee a developer a certain time-to-market by understanding dependencies between components. With Microsoft you're getting a business model that ensures OEMs a flexible platform that gives them a competitive differentiation if they're interested in doing that.

—Edward J. Correia

OPEN/SHUT

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I've seen is that only the larger organizations that have upwards of 20 engineers or more at their disposal can be successful with an open-source solution," Schwaderer concluded.

Green Hills Software Inc. (www.ghs.com) takes a slightly different approach with its Integrity, a royalty-free RTOS.

"Rather than creating a source base that is managed by the public and a distributed base of programmers, we manage the code base for our operating system product, as do other vendors like Wind River," said John Carbone, Green Hills' vice president of marketing. Green Hills markets a set of development tools for \$6,000 and will include unlimited distribution rights to Integrity for \$2,000 more. Source code is available for \$50,000.

"We take responsibility for supporting and enhancing the product, and fixing bugs," Carbone added. "That appeals to developers who don't want to take those responsibilities. We believe there's a large number of developers who fall into that category."

A DEAL WITH THE DEVIL

Do engineers really need—or even want—to see their operating system's

source code? Hundreds of third-party developers have built successful applications for Windows without ever seeing a single line of its source. "You don't really need to know how the operating system works," said Microware's Kaplan. "You just need to know how it supports your application." So why is source code so important to embedded developers?

Dan Dodge, chief technical officer of QNX Software Systems Ltd. (www.qnx.com), said that one of the main reasons embedded developers need to see the source code is for its educational value. "Open source teaches by example how to do things. I don't care how good your documentation is, if you have to write a [complex] application, the source is teaching by example a really good way to do that." He added that open source permits the developer to work around bugs in code that they don't own. "Otherwise, the RTOS is a black box. If developers can get at the source, they have control of their life, can fix the problem and move on."

But according to Wind River's Fogelin, making changes to RTOS source code can lead OEMs down a slippery slope. "There's always been a presumption that if you have the source code, you're in a much better place to support yourself," he said. "And I guess that's true and it's not true. It's like a deal with the devil. Part one is that if you've got the source code, you can isolate the problem. But there's the assumption that you can sit inside the mind of the designer and fix it in a reliable way."

"Second," continued Fogelin, "every time you make a change, you diverge from whatever source you used, and that's where we go toward 'you touch it, you own it.' Being able to read the source code is useful for sure, but it's a different kettle of fish to support it."

Still, Red Hat's Knuttila insisted that access to source code for embedded applications is imperative. "Embedded software differs from host software in that you're often adapting software to run on a particular device. You have different device driver needs and peripheral parts that one has to deal with when putting together a new reference board or printer or whatever. That almost always requires the availability of source. And if you are designing the hardware while you go, it absolutely requires it," he said. "You almost always have a unique environment and that means the source has to be available to you for adaptation. It doesn't say that it has to be open or closed; it just has to be open to you."

Knuttila made further distinction between embedded- and host-system development. "You're almost always [competing with] somebody on more than just the function of your software. You're part of a device now, and there are other factors that you're competing with," and there's even more reason to differentiate, he said.

But opponents of open source say

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that commitments under the GPL and other public licenses require companies to return their source code to the community, essentially handing a company's differentiating software to competitors.

"If you do something really special that differentiates your product," said Microware's Schwaderer, "your competi-

tors can walk in the door and take your intellectual property, because what you started with was a GPL that belongs to the world."

QNX's Dodge was less diplomatic when speaking about the GNU GPL under which Linux is licensed. "The GNU license is a virus. It is very explicit in the ways in which you are allowed to deploy that software, and it states quite explicitly that if you ship a system

with GPL code in it, the portions of the system that interact with that GPL code also have to fall under that GPL or you lose the right to ship the GPL code. What that means to OEMs is that if they ship a product with their intellectual property and special value-add, they could find themselves, if they mix their code up with GNU code, having to open-source their code as well." QNX licenses its source code, much of which

is open, under a more flexible agreement of its own, Dodge said.

Wind River's Fogelin agreed that the GPL has pitfalls. "For those product companies that are interested in valuing the software component of their product, it can expose the company to loss of intellectual property rights and control over their value."

But Red Hat's Knuttila said that savvy developers can write software that can legally forgo the requirements. "The line's reasonably clearly defined. The GPL specifically talks about what's linked together to form a complete program," he said, adding that there are ways to develop programs so that parts can remain closed and not fall under the GPL. "If you write a program that links to a GPL library that becomes one executable," Knuttila illustrated, "it's likely that the entire program would fall under the open-source license." On the other hand, what would not fall under the GPL requirement would be programs developed from scratch that run on Linux, he said, and those that link with libraries written under the Library GPL (LGPL).

But Fogelin pointed out that embedded systems are nothing like hosted systems. "Linus Torvald's overarching copyright says that if you link only to the system you are not obliged to be exposed by GPL, but that's a very difficult distinction because embedded applications and middleware get baked right into the operating system, so who's to say where the application ends and the system begins."

Although he did not concede the point, Knuttila stopped short of claiming open source to be the end-all for embedded development. "The question is how much you can control the cost profile of a project and whether you get advantages going one way or another. If you were building a Windows CE device or something that was suited for VxWorks or some other system, and if the cost profile was suitable, you'd probably be nuts to consider doing something different," he said, adding, "There isn't one general answer for all bodies. Sometimes it really does come down to the actual project you're working on. And if what you're doing fits the reference platform model perfectly, then it all comes down to dollars and cents."

Microware's Schwaderer summed up the debate this way: "You have to make a decision as a company whether or not you are going to include an operating system as part of your core competency. The only other option you have in the open-source world is to contract out the support," which he said can be expensive. ■



Savvy programmers can legally forgo GPL rules, says Red Hat's Knuttila.

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EDITORIALS

The Year of the XML

Every year, from the early 1980s onward, was hopefully proclaimed “the Year of the LAN.” The Year of the LAN seemed never to arrive, despite the appeal of file/print servers and client/server computing. It took the business demand for electronic mail in the early 1990s to finally inspire companies to begin running cables out to every desktop PC—and even then, it took the Internet to complete the job.

By contrast, the widespread acceptance and deployment of the Extensible Markup Language has occurred at meteoric speed. The first W3C XML draft was presented in November 1996 and was approved in February 1998. Since then, not only has the XML spawned an amazing number of three- and four-letter offspring, but those specifications have caught fire within the normally staid ranks of the corporate boardroom. It’s been the Year of the XML.

In fact, the pace is continuing to accelerate. The W3C has recently upgraded the Extensible Stylesheet Language as a candidate recommendation, and Document Object Model Level 2 is now an official recommendation. Sun Microsystems Inc. is testing new APIs to make it easier for Java developers to integrate XML functionality into their programs.

Smaller companies such as Odyssey Software Inc. and Securant Technologies Inc. are finding new ways to use XML to deliver content to mobile devices and to pass authentication data. Even the large European database vendor, Software AG, has seen its Tamino XML database push aside its other products to become the engine fueling the company’s growth.

It truly *has* been the Year of the XML. And next year will be, too.

Is Free Better?

Individual programmers love open-source software. Some big vendors, like IBM, love it too, at least as far as the open-source Linux operating system provides a low-cost platform for running IBM’s applications software on IBM’s hardware. Other big vendors, like Microsoft, hate it. And a third group, such as Sun and LynuxWorks, tries to have it both ways.

But do enterprise development managers love open-source software?

The arguments for adopting open-source platforms and applications are compelling. Developers can read the source to better understand confusing APIs and functions, as part of a source-code review and to help perform white-box testing. They can even make improvements or other changes to the code, although in some cases they must release those changes back to the open-source community.

What’s not to like? Well, there’s the perception that open-source customers aren’t as well supported as customers buying proprietary code. Another is that the vendors reselling open-source code can’t be held accountable for failures.

Another argument, particularly in the embedded space, is that operating-system and application source code is available. It’s just not “open” for free to anyone who wants it, but is restricted to paying licensees only.

Who’s right? Tell us what you think. ■

GUEST VIEW

ADOPTING MODELING FOR DEVELOPMENT TEAMS

Systems and software modeling tools, at their simplest, are single-user drawing tools, dedicated to diagramming systems and software using a standard notation such as UML. At their most elaborate, they are rich multiuser tool suites covering everything from modeling of initial system requirements all the way through to source-code generation. Improvements in multiuser support include a shared active repository, access control, fine-grained item-level locking and other features that let large teams work “live” on the same models. Simulation technology, once fit only for a university research grant, is practical for development teams that want to evaluate the behavior of a new product before they actually build it.

The industry has converged on UML as the standard notation for describing system functionality and software architecture, and the basis for simulation. UML’s popularity is growing so quickly that there is almost a “bandwagon effect” driving organizations to select tools before they think through what they want from a tool. Picking a top-shelf UML tool, however, isn’t enough. Proper use of UML-based modeling implies the development of an object-oriented design, and that in turn implies a change in development process and methodology for many teams. Tool vendors are only too happy to oblige by selling their wares to all and sundry, but conscientious vendors also want to ensure the success of those who buy these tools.

Adopting a modeling solution implies two significant changes: first, the adoption of a change in systems and software development methodology and process; and second, the adoption of the tool itself. Development teams are often mesmerized by flashy demonstrations of technology without adequately sizing up their team’s readiness to put the technology to work, or sizing up the extent to which the tool offering is ready for mainstream consumption; that is, ready for daily use by a real-life develop-

ment organization trying to meet a project deadline.

ALL OR NOTHING APPROACH

In the marketplace today, most modeling-tool vendors demand an “all or nothing” adoption of their offerings. Of course, they won’t use those words to describe it, but they assume that you’ll drop everything, embrace their wholly new architecture for your project and their wholly new methodology for development. Since modeling tools are typically spoken of with a “clean sheet” project in mind, vendors will sometimes skirt the question of how the tools are to be used on projects with significant legacy code.

Here are some things to consider when assessing your readiness for modeling tools: Does your organization have a written development process? Do you consistently do things the same way? Do you consistently use tools that are less demanding of process change than modeling tools (such as configuration management for version control)? Do you consistently write down project requirements and review them before the project begins? Do you hold design and code reviews?

My purpose in raising these questions is not to discourage you from considering modeling tools. But, your probability of success goes up considerably if you can answer “yes” to some of these questions, because you have already started down the road to a disciplined and repeatable development process.

Unfortunately, several of the tool alternatives are somewhat monolithic in their approach and have given modeling a bad name, making their adoption even more problematic. Shelfware is rampant in their wake.

For example, code generation is presented as the Holy Grail of modeling tools. But ask yourself this: When you got up this morning, was generating code your biggest challenge for the day? How often have your projects failed because your people couldn’t write code? Usually, when projects slip bad-

ly, it’s because the organization implemented the wrong thing, rather than doing a poor job coding the right thing. Does adopting code generation right now really matter?

The monolithic modeling approach proffered by some vendors says that you will build graphical models for each and every class of your code, and generate code from the model. But this approach means that every time you want to make a change in your code, you must go back to the model and make your changes there, then regenerate the code. Is this a sustainable process for your development team, or will they stop following the required procedure midway through the project? Is your team jumping through hoops to meet the needs of the tool, or is the tool actually accelerating your development?

A much more natural approach to improving development processes and adopting modeling is incremental adoption. Incremental adoption is not methodologically pure but rather recommends the immediate use of the parts of modeling that make sense and accelerate development today, and the gradual incorporation over time of more of the diagrams and processes that constitute a full adoption of UML. The eventual adoption of an end-to-end object-oriented development process remains the goal. You will find that some vendors embrace incremental adoption as the only realistic way to get from point A to point B. Others will dismiss it as not being “true UML.” Don’t get sucked into that debate. Are you a religious purist, or are you trying to get your project done in a predictable fashion?

When considering modeling tools, think about how much development discipline your developers are ready for, and how much process disruption your team can accommodate. And ask whether you are more comfortable adopting modeling with an incremental approach or a step-function approach. ■

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CAINE
O'BRIEN

LINKING UNKINKED

Good programmers are competent with their tools. They know the basic features well, and they have some knowledge of lesser-used options. With this knowledge, they can develop competent code in satisfactory quantity. Great programmers, however, make a point of knowing their tools intimately. They know many features, including the obscure ones, they know how to wield the tools to handle unusual situations, and just as important, they can bend the tools to do what they need. As a result, they generate better code more quickly. For this reason, before the advent of today's massive IDEs, advanced developers liked emacs, the fabled editing environment that sported scads of functions and its own macro programming language.

Today's development managers, especially those who did not serve a term as lead programmer—may not appreciate the benefits of imparting the details of tools to the developers who use them. But those who know the value of this information might be tempted to share John R.

Levine's "Linkers & Loaders" with their team. The link step is without a doubt the least understood in the programming cycle. Magical stuff happens during this short step that transforms object code into an executable file. Exactly what is happening remains an enigma to most programmers, who, as a result, underuse the linker options available to them.

For programmers who want to know more, Levine's book will be a start. It explains in considerable detail what happens during the link step. Levine begins by examining a linker listing and the object code generated by a program. The latter is then re-examined in the context of what it needs to execute properly. From there, Levine ties the specific linking actions to the formats of the object and executable files. Different executables require different linking steps, which themselves are often defined by the layout of the object files. As a result, Levine's book spends a considerable amount of space explain-

ing the object code and executable file formats. Undoubtedly, most readers will confine themselves to reading about the object files they use primarily.

At this point, readers have a solid basis from which to begin understanding the switches and options that their own linkers offer them. And this is where you would expect Levine to start explaining the options common to most linkers. But surprisingly, the book ends at this point. In fact, the end is abrupt. I expected something to take with me to my next project. I was expecting some explanation of abstruse linker switches for my environment—since Levine discusses Windows NT object files in detail (as well as Intel .obj files and SPARC binaries), it seems logical that linker switches that allow these files to be manipulated beneficially should also be discussed. This would have been most useful.

A more critical shortcoming is squeezing discussion of the Java linking model into fewer than four pages. Linking in a semicompiled environment such as Java has unique aspects that should be examined in detail. Yet the discussion of Java is so abbreviated as to provide virtually no information—a rather peculiar

lapse for a book published in late 1999. Finally, an omission defies explanation: The book's preface touts a linker project written in Perl that can be downloaded from the author's Web site. In fact, it is nowhere on the site. An inquiry to the author resulted in our being informed that he has not had the time to attend to this yet—which does his readers a grave disservice.

This book could have been useful to managers and developers alike and provided a wealth of valuable information. But just at the point where it would have come into its own, the author walks away. As such, I would avoid this book if I were aiming to provide developers on my team with information about the linkage step that they could apply to their next project.

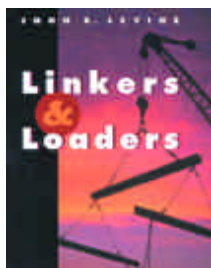
However, for readers whose interest in linkers is more a function of their own curiosity, Levine's book serves as a good introduction to linkers and to object files. For this purpose only, I can recommend the book. ■

"Linkers & Loaders." John R. Levine. Morgan Kaufmann Publishers, 2000. Paperback, 300 pages, \$36.95.

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ANDREW BINSTOCK



GUEST VIEW

DON'T DO IT ALONE

With the dot-com start-up frenzy winding down, venture capitalists are tightening their purse strings. So what does that mean for the entrepreneur hoping to build a better software mousetrap? Nothing we didn't already know: No business can succeed on hype alone. For software developers, success hinges not so much on technical prowess—that's the ante in the pot—but on solid business planning and execution.

The best advice you can take? Don't go it alone. Find experts to guide you. Find resources you can tap into quickly and easily. Find a partner who can help you focus.

Cynthia A. Erdman is director of strategy, business development and global operations for IBM Corp.'s developer relations group. You can reach her at cerdman@us.ibm.com.

Then execute. With speed, yes. But more important, execute only when you're satisfied you've asked all the right questions and found the answers that will let you sleep at night.

Okay, so you might not sleep too much. But you'll code easier knowing you've built a solid launching pad for your business.

If you approach the new business correctly, you will face a litany of tough questions and difficult decisions. You may be tempted to jump-start things by skipping a few details. Forget it. By taking the time now, you'll avoid a lot of headaches—and possibly save time and money—down the road.

The good news is you don't have to grope around in the dark for answers. Many companies, consultants and other

developers are willing to share their experience and offer advice to help you. What about the Web? Yes, it holds a wealth of resources, but the sheer volume of information can be overwhelming. Don't try to sort through it all yourself. A good developer's portal will present the information you need in an easily accessible format, while sifting out the chaff. And, it will continue to guide you as you develop your application and grow your business.

Here are a few things to consider before you leap into a new business venture.

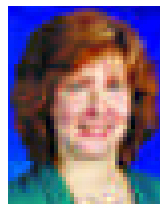
The big idea. Whether you've already started a company or are just thinking about it, no doubt you think you've got a great idea. But have you really thought it through? Before you get too attached to it, give your idea a litmus test. Does your idea address a specific need in the marketplace? Does your idea fit into a high-growth

area? Will you need to invest significant resources just to get started? Are those resources available to you?

The plan. Unless you're already wealthy, you won't get a dime to fund your business without a well-crafted business plan. There's plenty of how-to information to help you with the format. The hard part is answering all the questions: Who's on your management team? Who are your competitors, and why is your product better than theirs? Who will buy your product, and how will you get them to buy it? What are your revenue projections? Conducting careful research now may help you avoid costly mistakes later.

The money. You have several options to fund your business, including private funds, venture capital, business incubators and partners. Make sure you understand how each one works. What do you get and what do you give up to get it? Can you live with the answers?

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CYNTHIA A. ERDMAN

SDTimes

Software Development Times
December 15, 2000 - Issue No. 020

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WINDOWS GAMES FOR X-MAS, OR PLAYSTATION?

During in-depth discussion around the nether depths of a pint glass, I've discovered that a number of developers would like to be in game programming rather than building yet more e-business sites. I can relate—I'd rather be writing about motorcycle touring down the Italian Riviera. But Microsoft developers suffering from similar pangs are left somewhat in the lurch. Microsoft may want to take you where you want to go today, but on the gaming front, it's suffering from some real disadvantages.

I bring this up not only because of the impending holidays, but also because Redmond has recently announced a number of new initiatives for game developers. For starters, jump on over to <http://msdn.microsoft.com/directx> and download a development edition of DirectX 8.0. That's right, 8.0. If you're like me, you missed 7.0 entirely, but don't worry, because it already came and went, and if you don't pay attention you may skip 8 and wind up with 9 (slated for release mid-2001).

DirectX 8 is actually quite a boost over the last version, according both to Redmond and independent developers. The software has received a universal cleanup and several important new features, including a serious upgrade to

sound resulting in Direct Audio, which is basically an integration of what was once DirectMusic and DirectSound, but now also includes updated support for DirectPlay as well as the complete integration of the once-separate DirectShow.

On the graphics side, Microsoft has combined DirectDraw and Direct3D into a single Direct Graphics component. And to let users interface with your creations more easily, you'll find a new feature dubbed Action Mapping, which allows developers to map input actions to input devices without requiring the existence of specific input device objects. Yet more freedom from the hardware layer.

Frankly, while much of what I see in DirectX 8 is powerful, I'm most impressed with Direct Audio. These features really set the stage for some powerful new music and sound-effect creations. For one thing, you've got a much wider base of easily incorporated source files; Redmond's .WAV format can now be seamlessly integrated with outside audio files, with the entire combination being pumped through a single DirectX playback mechanism.

The base audio creation mechanism is the DLS2 synthesizer, which not only

creates all tones and stores them for processing, but also can subprocess multiple sounds simultaneously. This lets developers make better use of DirectSound3D by dropping multiple sound effects into the same spot in 3D space without causing the client CPU to suffer a meltdown. You can even use the DLS2 synthesizer as an intermediate playback device during development, complete with a handy developer-oriented task menu that includes submixing, a variety of ACM codecs as well as effects-processing buses.

But while DirectX 8 is a fairly impressive piece of code, how much does it really help Windows game developers? Not all that much. That's not to say that Redmond is ignoring gaming aside from DirectX. Along with the DirectX 8 release, Microsoft introduced two new logo programs: the Windows Gaming logo and the new Windows Hardware logo, the latter featuring required driver specs for both Windows Me and Windows 2000. (Indeed, the company is already laying plans to position the Whistler operating system as a gaming platform via the upcoming DirectX 9.) The Windows Gaming logo can be had only for games that support Windows 2000; additionally, if the game utilizes DirectX 8 (a high probability on the Win32 platform), it

must use DirectX 8 as the default.

But while these initiatives serve to tie developers closer to Microsoft and add a little stability for end users, Redmond still has a number of challenges to overcome when it comes to Windows-based gaming. Ease of use and hardware expense are two of the biggest, and even the most talented DirectX developers on the planet can't help them with that. Let's face it: Gaming on a PC requires some serious end-user knowledge, quite a bit of configuration time and usually a pretty hot system box. Compare that with sub-\$500 TV-based game consoles (even though some of these do run Windows CE), and the console experience wins hands down—especially if it's wired to a home theatre system.

How can Microsoft combat these advantages? By educating developers to exploit its strengths: collaboration and heavy metal silicon. By boosting online game collaboration, Microsoft could hit the console games where they're weak. And by emphasizing games with rich interactivity and on-the-fly customized experiences, Windows-based games could also make use of two other features a PC has that a console doesn't: a powerful primary processor and a hard disk. ■

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WINDOWS WATCH



OLIVER RIST



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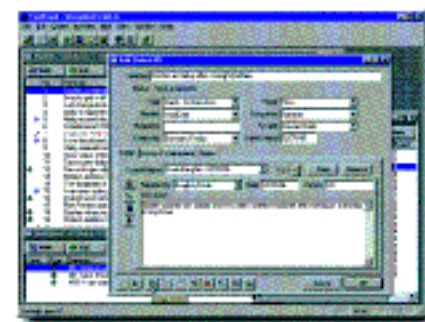
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XML MARKS THE STOP

Programmers should not build user interfaces. The job of the programmer stops at the production of an XML document that contains all the necessary data for user interface designers and implementers to translate into an effective display. I suggest that your Web architectures use this document as the link between that which is in the "engineering" domain and that which is in the "creative" domain.

There are many who disagree with this idea and even the concept of introducing preconceived boundaries to the architecture before the project has even begun. These people point to one of the oldest rules in systems analysis: the "Perfect Technology Assumption." This rule says that introducing considerations of "how things work" too early in the process stifles the possibility of great innovation; for instance, it leads to the thought that computers might be great at calculating ballistics charts that can be carried into the field without realizing that the calculations might be done at the moment of firing.

I use this hoary example of computational use because the Perfect Technology Assumption is a relic of another time, a relic that causes more harm than benefit in the Internet Era. In a time when a computing system likely involved the

creation of custom hardware and the development from the lowest levels of machine code of the software, the Perfect Technology Assumption made more sense, but they're largely a waste of time when you're developing a Web service.

Not long ago, I had a knock-down, drag-out brawl over this with another consultant. Every time he saw my architectural diagram, which featured a vertical dashed line labeled "XML over HTTP" separating various client systems from our services, his face turned beet red, his eyes popped, and steam shot out of his ears. "At this stage," he'd insist, "we should be talking about objects flowing back and forth, not serialization and transport protocols!" I would respectfully listen to his opinions before quietly responding that infinite bandwidth and idealized devices existed only in the world of his obviously serious cocaine addiction.

He believed that one of the great benefits of object orientation was that objects should carry with them the necessary intelligence to build their own interface, that an object that represented, say, classroom attendance would have, probably within an inside class, the information for creating a display of students and marking them absent or pre-

sent. If the system needed to work on multiple client displays, the class could use the Factory design pattern to produce the appropriate display.

I, on the other hand, thought that all objects exposed to the client should implement an XML serialization interface, and that doing so would encourage a clean separation of interface and business logic concerns, give us greater flexibility in terms of debugging and quality assurance, and allow us to implement interfaces in existing Web browsers via a server-side XSLT transform or new XML-aware browsers as they shipped.

Perhaps the single most significant benefit to me was that the interface could be created by Web professionals without involving engineering staff. This "provision transparency" is one of the great benefits of XML, but honesty demands that I admit that those wonderfully English-like XML tags can consume bandwidth pretty fast.

Of course, introducing the concept of limited bandwidth into an early-stage architectural discussion is also in violation of the Perfect Technology Assumption. How much value is there in a technical discussion of Web services that doesn't acknowledge the fundamental characteristics of the Internet? Not much, I say.

Another example of the outdated nature of the Perfect Technology

Assumption came at a seminar on human interface design that I attended last winter. We were doing an exercise that involved designing an interface for a system that captured the results of usability tests, in which a large volume of data associated with candidate user interfaces is generated in a very short amount of time. We were encouraged to think "outside the box," in short, to assume perfect technology.

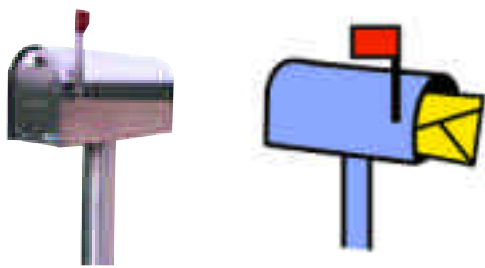
At first, this seemed like a good idea, as one of the students suggested that a pen-based interface would be faster for annotating a diagram than a mouse-and-keyboard interface. The second suggestion seemed to be a bit less valuable, as someone suggested that if voice recognition were integrated with the pen-based notation, data could be recorded faster still. The teacher brought us back to reality before I could sarcastically suggest that multiple cameras capturing the hand gestures and comments of everyone in the room would be better still.

The advantages associated with deciding, at an early stage, to leave the job of interface design to Web professionals is so great that I stand by my assertion: XML marks the stop. ■

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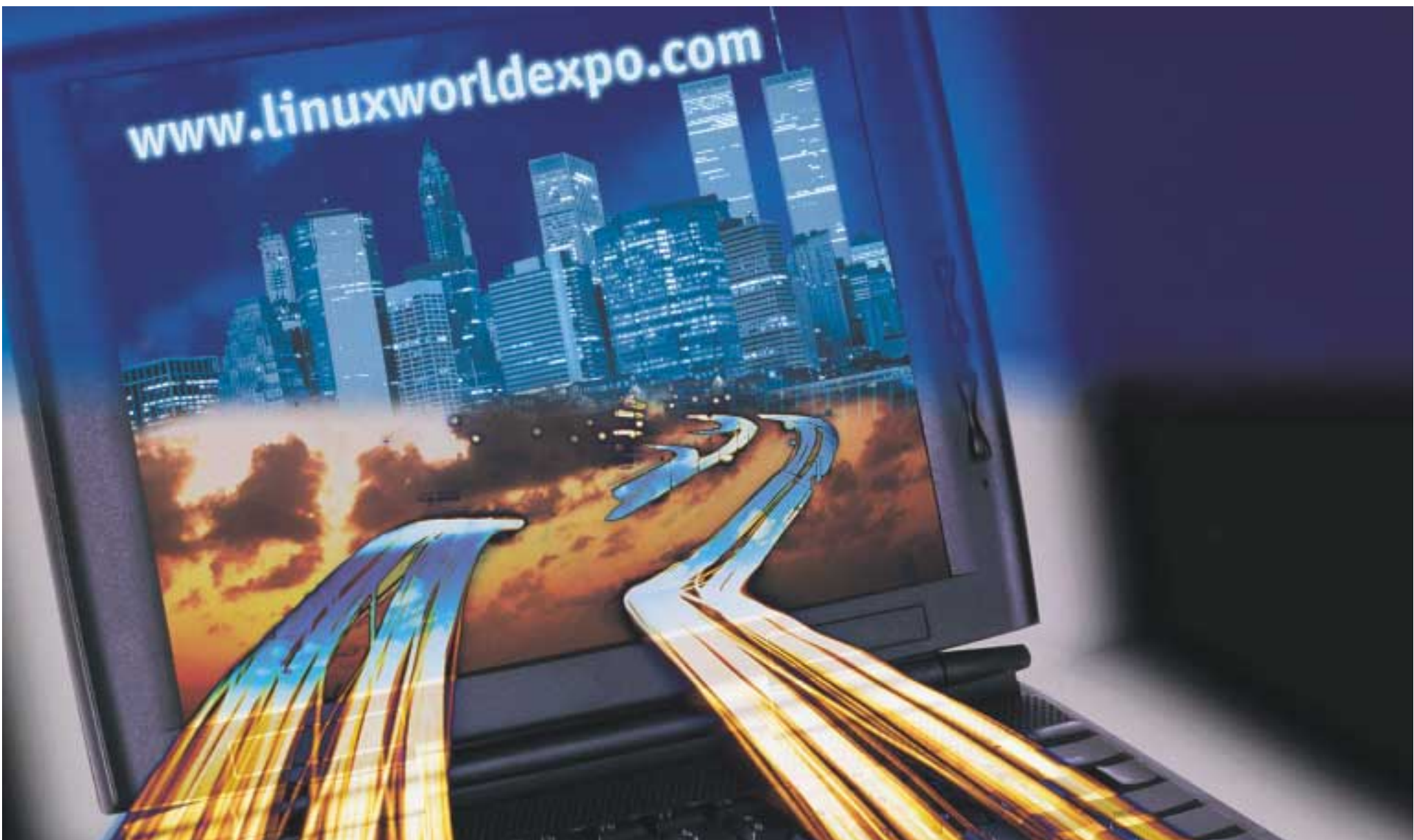
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THE COMING BACKLASH AGAINST ASPs

If your memory of computer history reaches further back than the great epiphany pointedly delivered this April to the we're-the-new-economy-and-you're-not dot.com'ers, then you have undoubtedly noticed two traits shared by most computing vagues: 1) The stage of enthusiastic adoption is followed by a serious backlash; 2) The backlash is followed by a period in which the technology is prematurely pronounced dead.

The only exceptions to these two rules are trends that have swept the industry and changed it forever—paradigm shifts—such as the PC, the Web and object orientation. Less-sweeping trends have had to suffer infatuation and rejection, like all of us at one time or another. Consider Windows, the Macintosh, C++, pen-based computing, client/server computing and ERP (especially ERP!) to name a few.

A clear candidate to add to the list is the application service provider. Right now, numerous businesses are discovering that indeed it is easier to have someone at a distant remove run and maintain complex applications for a monthly fee. And the success stories that support this model show happy IT managers freed from the shackles of constant maintenance and incessant firefighting. At the same time, though, voices of discontent are starting to be heard from customers who have not had quite the same satisfactory experience. These are the distant drumbeats of the coming backlash.

In my Oct. 1 column ("So This Is Mission Critical?" page 31), I pointed out that one of the unspoken risks undertaken when shipping out apps to an ASP is the inherent unreliability of the underlying communications media as the enabling technology. This point, of course, does not touch on the ASPs themselves, which is where the drumbeats are beginning to be heard.

The first example is the Pandesic saga. Pandesic LLC is an ASP that after signing up more than 100 clients with plenary service-level agreements, announced it would be "winding down"—that is, closing after year's end because of meager profits. Suddenly, shops that had outsourced to Pandesic are in a perverse scramble to find out who can take over their farmed-out apps and how to negotiate the transition so as to cause no operational disruption.

Pandesic is an important clarion call.

We're not talking about some small garage operation or a start-up specializing in new-economy-sized losses. Rather, it was a joint venture of industry giants Intel and SAP. If companies with pockets this deep are pulling out due to profitability, what does this say for the financial standing of companies without such august investors?

Want another example? Take USInter-networking Inc., probably the largest independent ASP today. The situation as announced in mid-November is a \$48 million loss on \$28 million of revenue for the most recent quarter. Not exactly encouraging.

An issue that has not yet arisen much on IT radars, but is bound to do so, is security. ASPs have the difficult task of allowing unfettered access to their clients' applications to everyone who needs it, while keeping out all crackers, hackers, viruses and other miscreants. This is no mean task. In fact, for most IT shops considering an ASP, security should be the first item discussed once the technical ability to run the shop's applications has been established.

But security needs to be expanded beyond just defenses to unauthorized external access. ASPs must husband clients' data carefully. Backups must be safe and secure and performed un-

ingly. Likewise, there has to be something of a clean-room aspect when ASP employees are working with clients who compete. How can a client shop prevent an ASP employee from discussing possible data he has seen with a colleague working on another account? Likewise, by adding employees to your staff who are not under your immediate control, there arises the threat of an additional layer of possible disgruntlement and malicious acts.

A recent survey by Zona Research contends that 96 percent of potential ASP clients view security as extremely important. That this number is not 100 percent is attributable in my view to the fact that security is associated with threats external to the ASP and that no major calamity—whether internal or external—has yet occurred to wake up the industry. This is largely due to the fact that ASPs are still in the pilot phase.

However, I believe that security and the longevity of ASPs will become significant obstacles to wholesale adoption of the ASP concept. And as more incidents are reported, IT shops will review exactly what it was that made ASPs so intriguing to begin with. ■

Andrew Binstock is the principal analyst at Pacific Data Works LLC. Reach him at abinstock@pacificdataworks.com.

MIDDLEWARE WATCH



ANDREW BINSTOCK

REMEMBERING THE PC ERA

Bill Gates buried the PC era on Nov. 12, 2000.

The PC has been good to Gates. He has profited more than anyone else on the planet from the rich flow of innovation, technology, ideas, products and money that the PC revolution unleashed.

Nonetheless, Microsoft's chairman used his Nov. 12 Comdex keynote to announce a new target for the company's work. The Microsoft Tablet PC will run a variant of Windows, no doubt. But it isn't a PC.

This isn't Microsoft's first dalliance with non-PC devices, of course. The company is making its third run at the PDA market with PocketPC—the consumer brand name for Windows CE. Microsoft has dabbled seriously with set-top boxes for televisions that browse the Web. It has partnered with pen-computer entrepreneurs. Most recently, it has conceived .NET, a comprehensive vision of network-based computing in which the PC has been demoted from its central role.

If Bill Gates can use his bully pulpit at the most important PC show of the year to promote a new technology initiative that isn't a desktop PC...well, it's the end of an era.

What's all that got to do with the price of Linux? I'm glad you asked. Microsoft's unbreakable lock on market leadership is tied to the desktop personal computer. Take away the PC and Microsoft's just another wannabe for the next paradigm. A

wannabe with a gazillion dollars in the bank, sure. But it's the closest thing to a level playing field the Linux community is likely to get. The Linux community can beat Microsoft in the post-PC world.

BUCKING THE CONVENTIONAL WISDOM

Here's the conventional wisdom about Linux: It's proven as a server for Web sites and other Internet services. It is making slow but steady progress as a general-purpose server operating system for other IT applications, though its success in this market is by no means assured. It is being adopted by a dozen companies every day to serve as the heart of embedded products in the consumer electronics, handheld computing and Web appliance markets. And on the desktop, it faces a long, uphill battle against Windows.

That last assertion is now open to challenge. If the PC is demoted from its current central role on the desktop, then it's a whole new ball game.

"We have to learn to distinguish between the desktop as a location and the desktop as we have come to accept it, which is a Windows PC," said Red Hat CEO Bob Young in an interview with VNU's Computing. "The Windows PC...is no longer a growth market. It is now a mature legacy market."

That's exactly right. Despite the awesome size of the installed base, there are

few new applications in the works for desktop PCs. No one expects to see a new killer app for the PC platform. No one's working on radical new designs. Economically, the desktop PC is irrelevant. It's not fueling R&D investments, conferences, seminars, magazines, new development tools, new applications... It's played out.

"We intend to be extremely successful on the desktop as a geographic destination," Young told Computing, "but [we] will be successful with Internet appliances."

A COMPELLING NEW VISION

Let's imagine Young is right. You have a cell phone with an LCD video display for teleconferencing. The phone runs Java so you can download games and telephone-directory apps, and it syncs with your home network every time you use it so your address book is always up-to-date. At your desk, you access the Web and ASP-based applications via a wireless PC or Internet appliance. Your stereo system is wired into your home network—a PC may serve as the administration hub for the network, or you may have a dedicated device. MP3s, not CDs, are your primary musical media. A flat-panel display hangs on your office or living-room wall, and you switch among Web pages, television channels, slide shows and hybrid interactive-TV channels at will.

Your handheld keeps track of your checkbook balance and your credit-card accounts so you can use it for online or

in-person shopping. A central TV server replaces all those set-top boxes, scanning sideband data on video channels for programs that match your viewing preferences, automatically recording them for possible later viewing.

Your kids will listen to music, communicate with friends and play games on wearable computers. Your refrigerator will generate your shopping list and warn you when the milk is about to go sour. Your car will sync with your PDA over a wireless connection to schedule a service appointment or an oil change.

Fantasy? Not really—all of the devices in this wireless Web-centric world are available now or under development. The really wild stuff is still under wraps in research labs.

What do all these applications have in common? They're as easy to accomplish with Linux as with Windows. Easier, in fact. The availability of source code, the low cost, the wealth of networking capabilities, the small kernel size, and built-in Internet connectivity make Linux a better choice than Windows.

If you agree that PCs will be less important in the wild and woolly Web-wired world of the future—and the writing is clearly on the wall—then it follows that Linux will be *more* important. On the Web, in IT's data centers, and yes, on the desktop. ■

J.D. Hildebrand is the former editor of such publications as Computer Language, Unix Review and Windows Tech Journal. Reach him at jdh@sdtimes.com.

OPEN SOURCE



J.D. HILDEBRAND

Open-Source Collaboration Not for Everyone

BY DOUGLAS FINLAY

Open-source software is not for everyone.

That was the position offered by Alan MacCormack, professor of technology and operations management of the

Harvard Business School, at last month's first-ever Collab-Dev Seminar sponsored by OpenAvenue Inc., a company developing collaborative portals for open-source developers.

Though MacCormack's posi-

tion may run counter to the beliefs of some members of the open-source community, it is not in dispute by representatives of two large American corporations, Federal Express Corp. and Sprint Corp., who

conveyed to seminar participants that open-source software has limitations to overcome before it gains a level of credibility with established software development departments.

MacCormack, the event's

keynote speaker, said that when Netscape Corp. threw its Communicator browser source code to The Mozilla Organization for open development in 1998, it ushered in a new software development paradigm, one that relied on contributions from open-source developers to build both flexibility and functionality into the product during uncertainties in the marketplace.

"Mozilla was the defining program in opening up open-source software development; it was the extreme," MacCormack said. What brings success in this marketplace now, he said, "is to get the closest match between what the developer offers and what the user wants" at the time he wants it.

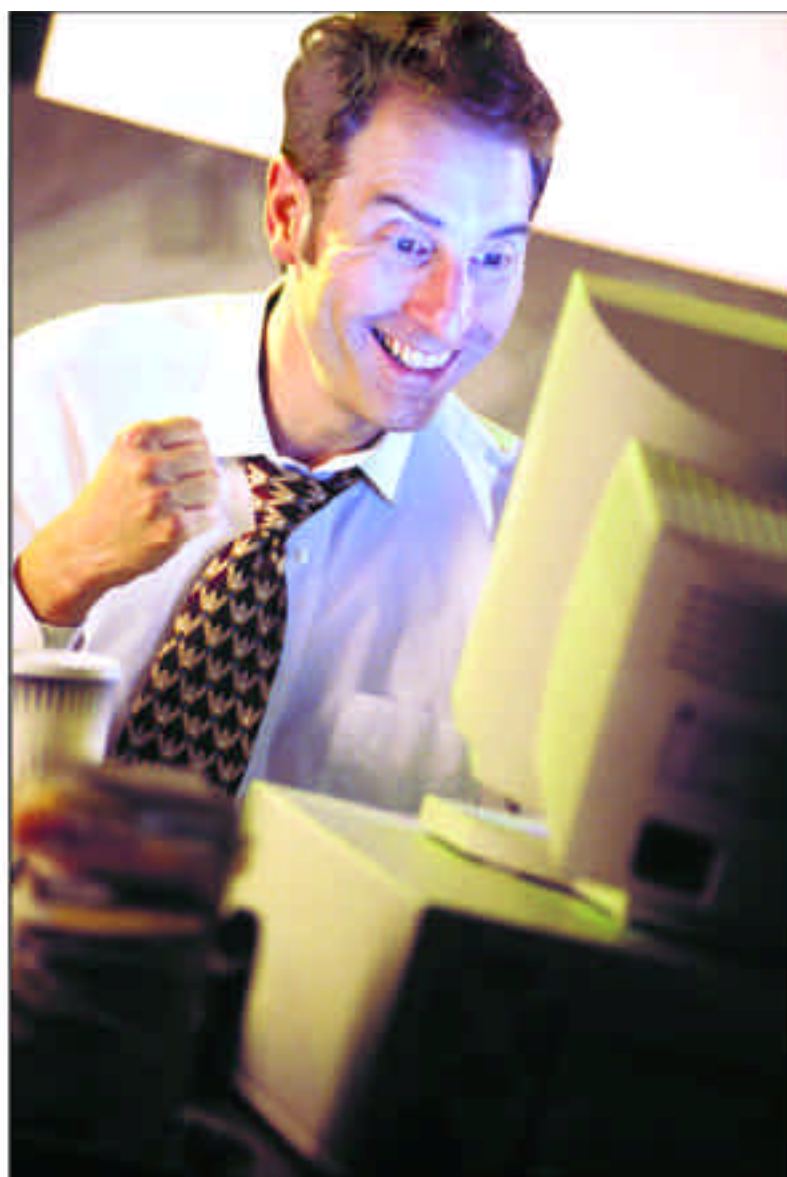
He also alluded to Linux development as being seminal in changing the direction of the software development process, pointing out that when it started in 1991 there were 10,000 lines of code. Now there are more than a million lines of code making up the operating system.

"The winners will be those that take a lean and adaptive approach," he said.

During a panel discussion that followed MacCormack's keynote, Jim Thannum, FedEx's director of Internet engineering, told the participants that open-source software enables the company to create added-value applications independent of the hardware configurations they use. "Open source can be ubiquitous; we can make ourselves independent of the hardware," he said. But ultimately, he said, the problem with open source is that there is no 24-hour-per-day, 7-day-per-week, 52-week-per-year support. "If we can't deliver a package, can we say it was because our Linux server crashed?"

Cloene Davis, Sprint PCS vice president of application development, said that collaboration would help the company develop high-quality software, especially now that Sprint was quickly moving into wireless applications. "We have a demand for wireless applications," she said, adding that the company is working on a compensation model for developers it brings in through the collaborative process.

However, she did say she would rather collaborate with an established stable of developers, because it could quickly increase the quality of product through the collaborative process. ■



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XML DEVCON

◀ continued from page 1

Priced at \$12,500, RadiantOne Pilot supports IBM Corp.'s SecureWay and Netscape's iPlanet directory servers. The price of this starter kit includes two days of on-site engineering support to install and configure the server and map database schemas.

The Austrian company **Altova AG** released the first beta to XML Spy 3.5, an update of its integrated development environment for creating and editing XML documents, schemas and Document Type Definitions (DTDs), and Extensible Stylesheet Language (XSL) files.

The flagship improvement in XML Spy 3.5 (www.xmlspy.com), according to the company, is its support for the W3C's Schema Candidate Recommendation released on Oct. 24, as well as its ability to convert schemas developed using the April 7 recommendation to the later format. The update also includes a COM-based API that allows XML Spy to be integrated into Windows applications. No date was announced for a final release of the 3.5 version,

which will be priced at \$199 per developer seat.

Another XML tool company, **Tibco Software Inc.**'s Extensibility division (www.extensibility.com), also announced an upgrade to its DTD/schema editor, XML Authority. The new version, 2.0ea, also adds support for the Oct. 24 Schema Candidate Recommendation and has a graphical schema editor. In addition, the company claims that XML

Authority 2.0ea is the first tool available for developing and deploying schemas for Oracle's Internet File System. The upgrade, currently available, costs \$99.95 per seat, and is a free upgrade for any version of XML Authority. It's also sold in a bundle, Turbo XML, which includes Extensibility's XML Instance (which builds XML documents using schemas) and XML Console (which provides batch validation and management of XML documents), for \$269 per seat.

NEWS FROM GERMANY

Although **Software AG** was not officially exhibiting at XML DevCon, the company used the opportunity to launch its Tamino XML Starter Kit, a time-limited version of its native XML database. The free

starter kit, downloadable from www.softwareag.com/xmlstarter kit, also includes the company's X-Bridge database connectivity tool and X-Studio development environment.

Alf Goebel, president of Software AG Inc., a wholly owned U.S. subsidiary of Software AG in Germany, said that in the near future, versions of the Tamino database will be released for the AIX and HP-UX operating systems. He also said that Software AG will be unveiling a significant partner program in the first quarter of 2001, demonstrating 20 to 25 third-party products built atop Tamino, including portals and vertical applications.

Looking ahead, Goebel said that it may take the company as long as two years to fully integrate **Saga Systems Inc.** into the company's technology and sales/marketing structure; Software AG purchased Saga in early November for \$360 million. He also said that Software AG is planning to spin off a wireless subsidiary in 2001. That may not be all. "We may not be able to continue growing organically," said Goebel, saying that to maintain its current 20 percent to 25 percent annual growth rate, Software AG will be making more acquisitions. ■

GUEST VIEW

◀ continued from page 29

Now what? There are four broad categories you need to focus on: enablement; technical support; communication and education; and marketing. In all of them, finding the right partners is key.

Enablement. That's your ability to actually build the application, which requires having developers on your staff with the right combination of technical skills. You simply can't hire a dozen talented developers off the street and expect them to be instantly productive. They need to understand your particular needs, and they need to understand the specific technologies that you have chosen. That takes time. But you can accelerate the process if you can find an expert who can help you—maybe even the vendors whose technologies you're using.

Technical Support. Your ability to get answers to technical questions quickly and easily

affects your bottom line. The key is to find the right information as quickly as possible. You'll want to select a technology partner who can offer expert technical advice that's tailored to your needs, so you can get the type of help you need when and where you need it.

Communication and Education. You cannot be a successful development manager if you're mired in old technology. But with so much new technology entering the market each day, you could easily be overwhelmed and pulled in too many directions. Once you lose your focus, so does your team. Partners can help you explore new technologies that can really make a difference in your business by packaging the information for you in an easily accessible format. Good partners will help you home in on what's truly significant and offer access to a wide variety of educational opportunities.

Marketing. You have a number of options for bringing your product to market. Some of these include build-

ing your own sales force, partnering with a company that has an existing sales force, and licensing your product to another firm. Often, but not always, technology partners can be effective marketing partners. Make sure you explore all the available options and fully understand how the relationship will work before you enter into any agreements. You'll need to answer three basic questions: How will you generate demand for your product? How will you process leads? How will you close sales? Pick a marketing partner who can help you answer these questions most effectively.

The overarching message is very clear: First, do your homework—all of it. Then, find allies. Your chances of success are far greater if you take the time to ask the tough questions up front. You don't have to have all the answers right away. You just have to find partners who can help you get the right answers when you need them. ■

News Briefs

MORE PRODUCTS

◀ continued from page 12

include support for autovectorization and OpenMP, enabling developers to use high-level OpenMP directives rather than write programs down to a low-level operating system interface. The C++ Compiler 5.0 is \$399, \$499 for the CD-ROM kit. The FORTRAN Compiler 5.0 is \$449, \$599 for the CD-ROM kit . . . Vital Inc.'s **CRISP Version 7.0** visual editing environment for Unix and Windows is available for developers. CRISP 7.0 features cut and paste, searching, syntax highlighting, macro editing, columnar editing and complete emulation modes for brief, vi, emacs, wordstar and edt . . . ChiliSoft Inc., a division of Cobalt Networks Inc., has released **ASP 3.6** for IBM's AIX operating system, which allows the Apache server running on AIX to run applications written for Microsoft's Active Server Pages. It comes with a QuickStart bundle option that includes a complete server-side ASP application development and hosting environment to quickly enable market readiness using the Apache Web server, FrontPage 2000 server extensions and the dBase database. Prices are \$1,995 for one processor, \$3,995 for two to four processors, and \$6,995 for unlimited processors . . . The latest version of Vignette Corp.'s **Vignette eBizXchange** for real-time exchange of business transactions across the Web is now completely Java 2 Enterprise Edition (J2EE) compliant, according to the company . . . Intuitive Systems' **\$499 Optimizeit 4.0** for Linux and Solaris tests and improves the performance of Java programs, including servlets, Enterprise JavaBeans, Java Server Pages and server-based applications. Pricing starts at \$499. New features include universal Java Virtual Machine support; offline profiling for testing programs in production environments; and cleaner integration with application servers . . . Empress Software Inc. has debuted the **Empress RDBMS** for the QNX Neutrino real-time operating system that features APIs for C, C++, ODBC, JDBC, Report Writer and SQL. Empress RDBMS for QNX is available for free . . . NQL Inc. has released the first beta of **Content Anywhere**, a content aggregation and delivery program that it claims transforms browser content into formats that can be published to desktop applications, corporate databases and Internet-enabled wireless devices . . . Parasoft Corp. now has a Linux version of its **Jtest Suite version 3.2**. Available now, the software sells for



\$3,495 and adds to the Solaris and Windows platforms for the Java white-box testing tool. The company expects to release Jtest 4.0 in January 2001 for all three operating systems . . . Percussion Software Inc.'s **Rhythmyx Content Manager 3.0** for XML content includes a new dynamic workflow engine to allow changes to work-flow states and transitions after deployment. It also features an enriched Rhythmyx Publisher, a loader module for uploading content from syndication services and file systems; enhanced template capabilities; and an improved user interface for richer content authoring.

PEOPLE

John Majeski has been named chief technology officer of Active Solutions. His new duties will include leading the company's development of current and future application service provider implementation . . . Brio Technology Inc. has appointed **Paul Steinberg** as vice president of business development. He will be responsible for developing high-level strategic alliances with emphasis on establishing long-term revenue streams, expanding OEM partnerships and exploring new markets for partnerships . . . **David Chappell** has been named vice president and chief technology evangelist for Progress Software Corp., maker of the SonicMQ message-oriented middleware . . . Timera, part of Fenix Enterprises, a technology holding company of Union Pacific Co. that builds employee tracking and scheduling systems, has named **Scott W. Smith** CEO. Previously senior vice president and general manager of SABRE Business Travel Solutions, Smith will expand Timera's existing customer base beyond the railroad and transportation industries and into new markets . . . **David Pallman** gets the nod to become NQL Inc.'s next chief technology officer. Creator of the Network Query Language, Pallman has held executive and management positions in NQL since 1993. ■



CHAPPELL

BUT DOES IT WORK?

Business-to-business computing continues to evolve at a pace even some hardened IT professionals find alarming. Businessmen, on the other hand, stopped evolving somewhere around the time of the Persian bazaars.

Certainly, the language of business has stayed the same. That language isn't Java or C#. It isn't HTML or XML. No, the communications paradigms established long ago still survive: "How much?" "You're out of your mind!" "You want it when?" "This thing doesn't work!"

With all this as a backdrop, it was interesting to hear the comments of computer software resellers and corporate developers at a recent round-table discussion sponsored by ComponentSource. The panel's stated goal was to compare and contrast the Java and .NET platforms, but it strayed into the realm of real-world instantiations of these architectures, and revealed the disconnect between the companies that sell leading-edge technologies and the companies trying to solve business problems.

While the industry waxes on about the latest technology, the newest "killer app," and carps that companies using yesterday's technology are losing their competitive edge, the poor customers who have to actually implement this stuff have much more pressing concerns. For them, using yesterday's tried-and-true technology often makes better business sense than risking their enterprises on emerging ideas that have yet to be battle tested.

For example, take the whole open-source debate. During the round-table, it was clear that the senior corporate development managers participating in the discussion didn't care if an operating system or an application is open source. They are looking for the best solution to

the problem they have of getting their applications running and deployed on multiple machines. Whether it's a proprietary Microsoft shop or a semiproprietary Java shop running diverse platforms, performance and scalability were the dominant themes.

Small companies have limited resources, a problem exacerbated every time a new technology twist is unveiled.



MONEY WATCH

DAVID RUBINSTEIN

These companies have to maximize what they have, and often can't support multiple platforms because of the time that would be spent on training and slowed development cycles.

"The open-source argument doesn't have any bearing on what we're doing," said Jeff McCulloch, of Financial Management Service, a bureau of the U.S. Treasury Department. His department is using Microsoft's COM component-development model. "We're looking at an easier, more accessible development environment that we can use throughout the enterprise."

The discussion then turned to the Java platform, which is growing in popularity among enterprises that need to be able to deploy applications across multiple platforms. Again, the cries of taking it to a standards body were heard, but not for the reason you would expect.

Some enterprise developers actually want the growth of the platform to be slowed by a standards body. To hear Steve Richardson, chief technical architect at component author Vercom Inc., tell it, "It would be beneficial if [Java] is slowed down so people could grasp what's going on." His concern, echoed by many in the enterprise development community, is that companies are being rushed into using technologies that have not been proven, and just when you commit

resources to understanding the current version of the platform, the next version hits and the training begins anew.

Meanwhile, the whole .NET issue has caused consternation, as voiced by Tim Oliver, systems analyst developer at General Electric. "We moved from COM to EJB," he said, "because the .NET paradigm was a decision block. We went with a cross-platform option with Java technology." Microsoft is spending billions developing and touting the .NET Framework, yet enterprise developers today don't know precisely what it is, how it will work or even when it will ship. As their development cycles shorten, they have to move, and can't commit to a platform as nebulous as .NET.

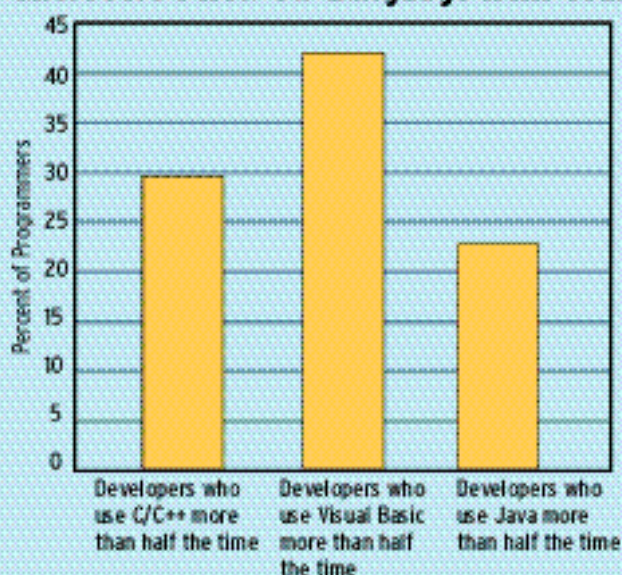
Interestingly, the round-table participants could only scratch their heads when it came to the topic of development cycles. Aberdeen Group's research director of Enterprise Java Tom Dwyer said he sees IT workers with slumping shoulders, showing the strain of working under intense deadlines to get it done now, even though it's not necessarily right.

In the not-too-distant past, companies would deploy an application, and the next version might take eight months to a year to roll out. Now, Dwyer said, he's seeing 10 or 11 updates per year, so business decision makers are not as distraught if the first rollout is not 100 percent. The mentality has shifted to letting it deploy, and then fixing it in the next go-round, putting tremendous pressure on the development teams to keep at it, solving problems in the first release while working to add whatever value they can into the next.

As the riptide of technology threatens to sweep business into uncharted waters, many companies find themselves clinging to the rocks. As the old businessmen would say, "We do what we know." Anything else is just too big a risk. ■

David Rubinstein is executive editor of SD Times.

Percentage of Developers Likely to Try Microsoft's New C# Language Next Year



EVANS DATA WATCH

Considering it has not been released yet, Microsoft Corp.'s new C# programming language is thought of by developers in a positive way, with 30 percent of all developers saying they are likely to try using it next year.

Heavy users of Visual Basic were most likely to try C#, with more than 42 percent of those using Visual Basic more than half the time saying they would be likely to try C# in the next year.

The new language has somewhat less appeal among C/C++ programmers, with just under 30 percent of those using C/C++ more than half the time indicating interest. Fewer than 25 percent of those using Java more than half the time say they would be likely to try C# next year.

The results come from a survey of more than 600 developers—not necessarily developing for Windows—as part of a continuing North American Developer Survey series.

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ON THE INSIDE

Buy low, sell high. Or, in the case of insiders, redeem those hard-earned options when your company's stock price is up. Sadly, though, the markets have been down and look to finish the year on a low note. The uncertainty of the presidential election certainly didn't help, nor did many lower-than-expected earnings reports. The dearth of reports of insider trades for the months of October and November reflects the cycle, with one analyst showing the markets being in a neutral mode as indicated by insider information.

Let's hope the new year brings a return to skyrocketing markets and profitability for us all, everyone. Of course, health and happiness would be good, too.

At **Microsoft Corp.**, chief software architect Bill Gates sold 5 million shares at \$69 per share on Oct. 30. **Sun Microsystems Inc.** executive VP Michael Lehman sold 128,000 shares on Oct. 31 at \$105 per share. **RSA Security Inc.** senior VP Joseph Uniejewski optioned 7,976 shares at about \$57 per share on Oct. 31. They were acquired at about \$14 per share.

Happy Holidays!



CALENDAR OF EVENTS

Visual Studio Developers Conference (VSLive: VBITS, VC++ DevCon, SQL2TheMax, Exchange) Jan. 13-20

San Francisco Marriott and the Palace Hotel, San Francisco
FAWCETTE TECHNICAL PUBLICATIONS

All conferences and workshops, \$2,595; VBITS only, \$1,295; custom packages available.

www.vslive.com

LinuxWorld Conference & Expo Jan. 30-Feb. 2

Jacob K. Javits Convention Center
New York

IDG WORLD EXPO

All events, \$895; packages and student discounts available.

www.linuxworldexpo.com

Embedded Executive Summit Feb. 4-7

La Costa Resort, Carlsbad, CA
CMP MEDIA INC.

Summit registration only, \$2,195; all-inclusive packages available.

www.embedded.com/exec

Windows Embedded Developers Conference Feb. 6-8

Mandalay Bay Resort and Casino, Las Vegas
CMP MEDIA INC.

Pricing not yet announced.

www.WindowsEmbeddedDevCon.com

Internet Appliance Workshop Feb. 20-21

San Jose Wyndham Hotel, San Jose, CA
CONFERENCE CONCEPTS INC.

Two-day conference including all events, \$995; tutorials only, \$595; workshops only, \$495; single tutorial, \$345; early-bird discounts before Feb. 2.

www.netapplianceconf.com

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